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**THE APPLICATION DEVELOPMENT OUTSOURCING CONTRACT
DECISION: THE EFFECT OF SERVICE QUALITY, RELATIONSHIP
QUALITY, SATISFACTION, AND SWITCHING COSTS ON
CONTINUATION AND DISCONTINUATION DECISIONS**

by

G. Dwayne Whitten, B.A., M.B.A.

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Business Administration

COLLEGE OF ADMINISTRATION AND BUSINESS
LOUISIANA TECH UNIVERSITY

May 2004

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April 19, 2004

Date

We hereby recommend that the dissertation prepared under our supervision
by G. Dwayne Whitten

entitled The Application Development Outsourcing Contract Decision:

The Effect of Service Quality, Relationship Quality, Satisfaction, and Switching Costs on

Continuation and Discontinuation Decisions

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ABSTRACT

Although the popularity of IT outsourcing has grown over the last two decades, approximately one third of outsourcing contracts are discontinued. This discontinuation of contracts has resulted in renegotiations with the original outsourcing vendor, switching to another vendor, and backsourcing, or the return of previously outsourced functions in-house.

IT outsourcing is expected to grow to a \$160 billion industry in the United States alone by 2005. Given the conclusion by some researchers that so many outsourcing arrangements end in vendor switches or backsourcing, it is apparent that a large amount of money is being needlessly wasted. By better understanding the factors that may lead to the discontinuation of outsourcing contracts, perhaps outsourcing vendors can increase the success rate of outsourcing agreements and companies can make better outsourcing decisions. Thus, the objective of this research is to determine what factors may be associated with the decision to switch vendors or backsource.

IT application development managers were surveyed and 160 responses are analyzed. This data set was subjected to logistic regression analysis to determine the factors associated with application development outsourcing discontinuations. Constructs utilized include service quality, satisfaction, relationship quality, and switching costs.

These constructs were chosen as a result of a broad review of the IT and marketing literatures for factors associated with bringing services in-house or switching to another service provider.

Overall, poor communication, lack of timeliness, low user understanding, low reliability, high lost performance costs, high pre-switching costs, high sunk costs, and high management costs are significantly related to the decision to discontinue an application development outsourcing contract. These factors span across the four constructs proposed.

This research answers a call by Lacity and Willcocks (2001) to investigate back-sourcing, as well as a similar outsourcing outcome, switching vendors. The results not only help fill a void in the academic IT outsourcing literature related to outsourcing contract discontinuations, but also provide practitioners with a valuable indication of the factors associated with outsourcing contract discontinuation.

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Author Dwayne White
Date 5-17-04

DEDICATION

I would first of all like to thank God for giving me the opportunity to begin graduate school and ultimately obtain a degree. Without His guidance, strength, and support none of this would be possible.

I want to thank my wife Leslie for supporting my decision to go back to school and making all of this possible. There is no way that I would have been able to make it through all of the courses, comps, and dissertation without her support and love. She convinced me that we could make it, no matter how challenging the road became. Leslie has also done a lot of solo parenting while I was at the office studying or on the road between Arkadelphia and Ruston, and I truly appreciate the good job she has done. I also want to tell Dacey, Braeden, and Addison that I hope you don't remember the times that I was gone, but wanted to be home with you.

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CHAPTER 1

INTRODUCTION

Outsourcing of information technology (IT) has become a widely used method by which to provide IT services (Goles, 2002). IT outsourcing began in the 1960s when many organizations could not afford expensive mainframe computers. Outsourcing, at that time, emerged in the form of time-sharing arrangements. The 1970s and 1980s brought the emergence of outsourcing in the form of application development, contract programming, and specific processing services. IT outsourcing then expanded into the outsourcing of enterprise-wide systems integration, application development, and systems operation in the 1990s (Lee and Kim 1999b; Li, Yen, and Chou 1997). Today, organizations have a wide variety of sourcing options and outsourcing involves larger percentages of overall IS budgets (Hirschheim and Lacity 1998).

Beginning with the groundbreaking deal Eastman Kodak struck with IBM, DEC, and Businessland in 1988, IT outsourcing has become a valid option in all areas of IT service (Grover, Cheon, and Teng 1994). The Kodak event has changed the way organizations think about sourcing, and has led to a number of Fortune 500, and other companies that have “jumped on the outsourcing bandwagon” (Lacity and Hirschheim 1993a).

Large companies like Continental Bank, Enron, and Continental Airlines have followed Kodak with similar deals to outsource considerable portions of their IT functions. Even

larger, multibillion dollar deals have been signed by Xerox, General Dynamics, and McDonnell Douglas (Lacity & Hirschheim, 1995; Lacity and Willcocks 1998b). At the other end of the spectrum are the numerous community banks, financial services companies, and local hospitals that are outsourcing their IT functions as well.

Outsourcing has become more frequent in recent years due to organizations desiring to maintain diverse and high-quality information systems (Lee and Kim 1999c). It is this desire that leads companies to utilize outside sources to fulfill important organizational functions. Although the frequency of IT outsourcing has grown over the last two decades, a number of outsourcing contracts have been discontinued. These discontinuations have resulted in renegotiations with the original outsourcing vendor, switching to another vendor, and backsourcing, or the return of previously outsourced functions in-house (Lacity and Willcocks 2002).

The outsourcing literature is replete with research evaluating the determinants of information systems outsourcing, best practices, and more recently, research related to outsourcing relationships. However, additional gaps still exist in the literature. Lacity and Willcocks (2000) called for “a thorough evaluation of backsourcing” as one of the suggested directions for future research. The basis for their suggestion rests in the fact that 34% of outsourcing is brought back in-house (Lacity & Willcocks, 2000) either at the end of a contract period or as a result of a cancellation of an outsourcing contract. Further, a literature review on backsourcing reveals little work has been completed in this area. Even “little has been written about companies that evaluate outsourcing but choose insourcing” (Hirschheim and Lacity 1998). Further, very little research on vendor

switches has been conducted. The suggestions by leading outsourcing researchers (Lacity, M. et al., 2000) and the gaps in outsourcing literature support the need for research on the discontinuation of IT outsourcing contracts resulting from vendor switches and backsourcing. The term *discontinuation* will be used in the current research to collectively describe backsourcing and vendor switches.

Research Objectives

The main research question for this study is “What factors may be associated with the decision to switch vendors or backsource?” In addition, is there empirical evidence to support the relationships between these factors and the resultant IT sourcing decision?

Quantitative evidence from this study will show the correlations between certain factors and the sourcing decision. This evidence will provide a unique view of the outsourcing relationship due to the pioneering efforts in this area. In addition, the survey-based data collection methodology will provide quantitative data that will supplement the considerable amount of qualitative works already produced by some of the IS outsourcing research leaders (Hirschheim and Lacity 1998; Jurison, 1998; Lacity, 1992; Lacity and Hirschheim 1993b; Lacity & Hirschheim, 1993; Lacity, M. et al., 1995; Lacity and Willcocks 1998a; Lacity and Willcocks 2000; Lacity and Willcocks 1996; Lacity, M. et al., 2000; Lacity & Willcocks, 2001; Willcocks and Lacity 2000).

Research Framework

The research model, further detailed in Chapter 3, is based on two research theories: agency theory and transaction cost economics theory (TCE). Both of these theories propose that economic actors have the propensity to shirk responsibility and act

opportunistically. As a result, the client is likely to obtain less than desirable results from the outsourcing relationship. The agency and transaction costs associated with monitoring the relationship in order to raise the desirable results to a satisfactory level are often high, and can impact the relationship in various ways.

Grover, *et al* (Grover, Cheon, and Teng 1996a) proposed that outsourcing success was influenced by the extent of outsourcing, namely applications development, systems operations, telecommunications, end-user support, and systems planning and management. The results of their study indicate that the extent of outsourcing was related to outsourcing success. Service quality was also shown to be important to the success of the outsourcing arrangement. Other researchers (McFarlan and Nolan, 1995) also suggest that service quality is positively associated with outsourcing success.

Satisfaction has been linked to intent to repurchase or continue a relationship (Anderson and Sullivan 1993; Bolton and Drew 1991a; Bolton and Drew 1991b; Oliva, Oliver, and MacMillan 1992; Oliver 1981; Oliver 1980; Patterson, Johnson, and Spreng 1997; Ping 1994). Results have also shown that satisfied channel members are less likely to exit a relationship (Hunt and Nevin 1974; Ruekert and Churchill, Jr. 1984). Additional research confirms that dissatisfaction more heavily impacts repurchase intentions than does satisfaction (Bolton, 1998).

The marketing and IS research shows a link between relationship quality and relationship success (Anderson and Narus 1990; Dwyer, Schurr, and Oh 1987; Kern 1997; Mohr and Spekman 1994; Morgan and Hunt 1994b). Specifically, IT outsourcing success has been shown to depend on the relationship between the client and the vendor (Kern, 1997b).

Quality relationships between firms and outsourcing vendors have positively influenced the success of the outsourcing agreement (Grover, Cheon, and Teng 1996b; Kern 1997; Lee and Kim 1999a). 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.

Research has shown that customers are willing to stay in relationships in which they are dissatisfied due to the presence of high switching costs (Morgan and Hunt 1994a; Porter, 1980; Willcocks and Lacity 1995). In environments where switching costs were not present, customers reacted by switching vendors (Heide and Weiss 1995; Jones and Sasser 1995). Thus, it appears that switching costs are negatively associated with the decision to switch vendors or backsource application development and maintenance.

Contributions of this Dissertation

One important reason to pursue research in this area is based on the estimation that IT outsourcing is expected to grow to a \$160 billion industry in the United States alone by 2005 (Vijayan, 2002). Given the conclusion (Lacity, M. et al., 2000) that so many outsourcing arrangements end in vendor switches or back sourcing, a large amount of money is being needlessly spent on outsourcing contracts that are discontinued. By better understanding the factors that may lead to discontinuation, outsourcing vendors may be able to increase the rate of continued outsourcing agreements and client companies may make better outsourcing decisions.

A second contribution will be the analysis of the back sourcing and switching situations. Lacity and Willcocks (Lacity, M. et al., 2001) called for an investigation of back sourcing.

Based on an extensive literature review, very little work has been done on back sourcing or switching. Thus, this research can therefore provide a starting point for future research on an important topic which is not well understood.

Organization of the Dissertation

This dissertation will begin with a literature review, Chapter 2, of outsourcing research. This research will synthesize several research theories related to service quality, satisfaction, relationship quality, and switching costs. Chapter 3, Research Methodology, will describe the research model, research hypotheses, and scale development. Then Chapter 4, Discussion, will begin with a description of the sample and data collection followed by a thorough discussion of the data analysis. The results of hypotheses testing will then be discussed. The dissertation will close with Chapter 5, Conclusions, which will summarize the findings of the research, provide practitioner and academic contributions of the research, and implications for further research.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to review the literature related to the factors associated with the decision to backsource or switch vendors in an application development outsourcing arrangement. The factors investigated are service quality, satisfaction, relationship quality, and switching costs. Descriptions of each of the four factors are included, as well as models describing each factor.

Service Quality Introduction

Service quality can be defined as the conformance to customer requirements in the delivery of a service. It is a perceived judgment that results from comparing customer expectations with the level of service customers perceive to have received (Parasuraman, Zeithaml, and Berry 1988). Since quality can be engineered into a manufacturing production process using statistical quality control processes, progress in manufacturing quality control has evolved rapidly (Garvin 1983). 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 (Kettinger and Lee 1994).

Development of the SERVQUAL Instrument

Service quality has been the most researched area of services marketing (Fisk, Brown, and Bitner 1993). A key point in the service marketing literature began with a series of interviews conducted in the 1980s by Parasuraman, Zeithaml, and Berry (1985). 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 researchers were attempting to gain insights into the following areas.

- Service quality attributes as perceived by service firm managers and consumers
- Common problems and tasks associated with providing high quality service to customers
- Differences in consumer and service marketers' perceptions of service quality
- The feasibility of combining consumer and marketer perceptions into one service quality model viewed from the consumer's perception.

As a result of their research, Parasuraman, Zeithaml, and Berry concluded that service quality is based on the difference between what the consumer expects, and what they actually receive. Others have used the same definition (Sasser, Olsen, & Wychoff, 1978). Parasuraman and his fellow researchers suggest that service quality be measured as the difference between the sum of customer's expectations and perceptions of actual performance levels for a set of service attributes (Parasuraman, Berry, and Zeithaml 1991c; Parasuraman, Zeithaml, and Berry 1985). They identified exceeding customer expectations as a way to maximize quality. The higher the performance-minus-expectation score is, the higher the level of perceived service quality.

The SERVQUAL instrument emerged from the Parasuraman, Berry, and Zeithaml research as an on oft-used measure of service quality. This instrument has been adapted and used in many other service industries. Examples of instrument use include, but are not limited to, industries such as retail (Hui 2002), local government (Wisniewski 2001), library service (Cook and Thompson 2000), hospital service (Lam 1997), shipping (Srinivas, Lysonski, and Mehta 1999), and information systems (Jiang, Klein, and Crampton 2000; Kettinger and Lee 1997; Pitt, Watson, and Kavan 1997; Van Dyke, Kappelman, and Prybutok 1997), where the applicability of the instrument has been studied and researchers (Jiang, Klein, and Carr 2002; Jiang, Klein, and Crampton 2000; Kettinger and Lee 1997; Pitt, Watson, and Kavan 1997) argue that it has great potential.

History of Service Quality Assessment

The 1985 Parasuraman, Berry, and Zeithaml article, resulting from in-depth interviews, identified a group of five key gaps that exist in regards to executives' perception of service quality. This research began the modern service quality discussion in the marketing discipline. The gaps identified in the 1985 article and a definition of each follows.

- Gap 1: Difference between consumer expectations and management perceptions of consumer expectations.
- Gap 2: Difference between management perceptions of consumer expectations and service quality specifications.

Gap 3: Difference between service quality specifications and the service actually delivered.

Gap 4: Difference between service delivery and what is communicated about the service to consumers.

Gap 5: Difference between consumer expectations and perceptions of actual service.

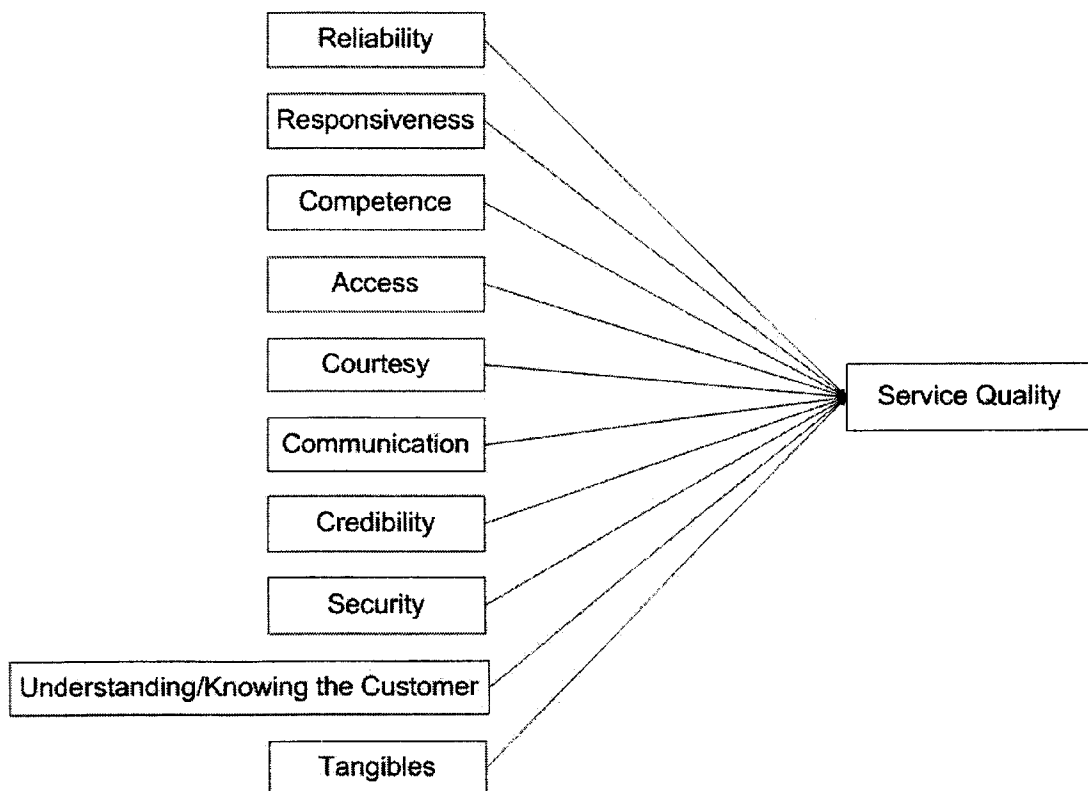


Figure 1. Determinants of Service Quality

The focus groups used in the 1985 article revealed a common set of criteria used in evaluating service quality. These criteria were labeled “service quality determinants” (p. 48) and are shown in Figure 1. A brief description of each follows.

Reliability involves honoring promises, delivering service on-time, and maintaining a consistent level of performance and dependability. Responsiveness is the willingness of an employee to perform a service in a timely manner. Competence is the possession of the needed skills and knowledge to attain a service goal. Access is the convenience and ease of contacting a service provider. Courtesy involves appearance, politeness, respect, consideration and friendliness of the service provider. Communication is the information, including cost, service level, and problem resolution process, provided to the service customer. Credibility of the service provider revolves around keeping the customers’ best interest in mind. Credibility entails trustworthiness, believability, and honesty. The eighth of the ten determinants is security and is concerned with minimizing or eliminating danger and risk. Understanding/knowing the customer involves taking the time to recognize the needs of the customers, as well as providing individual attention. Lastly, tangibles include the physical presence of the service such as facilities, personnel appearance, and equipment.

After assessing the determinants and gaps associated with service quality, an instrument was produced that contained 97 items related to expectations of service a customer would expect within a particular service category and 97 items related to a customer’s perception of the actual service quality that was received during the last service encounter with a particular service provider (Parasuraman, Zeithaml, and Berry 1988). The 97 items

were constructed based on the ten service quality dimensions determined earlier. The instrument was administered to 200 adult respondents in a large shopping mall. The respondents were segmented across five service categories – appliance repair and maintenance, retail banking, long-distance telephone, securities brokerage, and credit cards. The above five service categories were chosen because they were representative of service in general (Lovelock 1983).

Measurement items were calculated by comparing perceived performance of the service provider and customer expectations. The famous equation, $Q=P-E$, was derived from Gap 5, where Q = perceived service quality, P = perceived service, and E = expected service. According to the equation, the key to maximizing service quality is in maximizing the perceived service – expected service gap. The resulting items were then plotted in rank order by correlation for each dimension. Items with low correlations were removed from the instrument. An iterative process was undertaken until a final set of 54 items was revealed. Factor analysis was then performed to further investigate. Thirty-four items emerged from the factor analysis representing seven distinct dimensions. Five of the 10 original dimensions remained- tangibles, reliability, responsiveness, understanding/knowing customer, and access. The remaining five dimensions, communication, credibility, security, competence, and courtesy, collapsed into two distinct factors labeled D4 and D5 (Parasuraman, Zeithaml, and Berry 1988).

To further evaluate the instrument, a second sample was selected from a shopping center in another part of the country. Data were collected regarding service quality of a nationally known bank, credit-card company, appliance repair and maintenance firm, and

long-distance phone company. An analysis of the survey data ultimately resulted in a 22 item SERVQUAL after 12 items were removed due to low correlation scores and poor factor loadings. Factor analysis resulted in five factors. The factors Tangibles, Reliability, and Responsiveness remained the same as in the previous analysis. Two new factors were established by collapsing previously established factors together. Assurance evolved as a result of combining D4 and D5, while Empathy emerged from the combining of Understanding/Knowing the Customer and Access. Items representing the original dimensions of communication, credibility, security, competence, courtesy, understanding/knowing customer, and access, ultimately loaded in the dimensions Assurance and Empathy. Although SERVQUAL resulted in five distinct factors, each of the original 10 dimensions are represented in the instrument. A brief description of the five dimensions follows (Parasuraman, Zeithaml, and Berry 1988).

- Tangibles: physical facilities, equipment, and appearance of personnel
- Reliability: ability to perform the promised service dependably and accurately
- Responsiveness: willingness to help customers and provide prompt service
- Assurance: knowledge and courtesy of employees and their ability to inspire trust and confidence
- Empathy: caring, individualized attention the firm provides its customers

Quantitative tests on the data across multiple industries and stages revealed high reliability in the instrument. Further, a consistent factor was developed, even after returning to the stage one data, removing the 12 items displaced in stage two, and reanalyzing the data. Further tests provide statistical support for validity of the instrument. Ultimately a 22-item scale was developed, with good reliability and validity, that could be used to measure and understand service quality (Parasuraman, Zeithaml, and Berry 1988) (Table 6).

Parasuraman, Berry, and Zeithaml continued their work into the 1990s with success as well. A zone of tolerance (see Figure 2), or the difference between a customer's adequate level of service and their desired level of service, was later discovered (Zeithaml, Berry, and Parasuraman 1993). Evaluating the zone of tolerance required the addition of another SERVQUAL section or column, namely the minimal level of service required. This newer conceptual SERVQUAL model is based on the following two propositions:

1. Customers assess service performance based on two standards: what they desire and what they deem acceptable.
2. A zone of tolerance separates desired service from adequate service.

In essence, the zone of tolerance is the area in which customers tolerate service levels. As long as customers are in this zone, they are accepting of the level of service currently being received. This zone is apt to fluctuate depending on a number of factors such as price (Zeithaml, Berry, and Parasuraman 1993). For example, an increase in the price of a service may not affect the desired level of service required

by a customer although the price increase could require a higher level of adequate service, thus decreasing the size of the zone of tolerance.

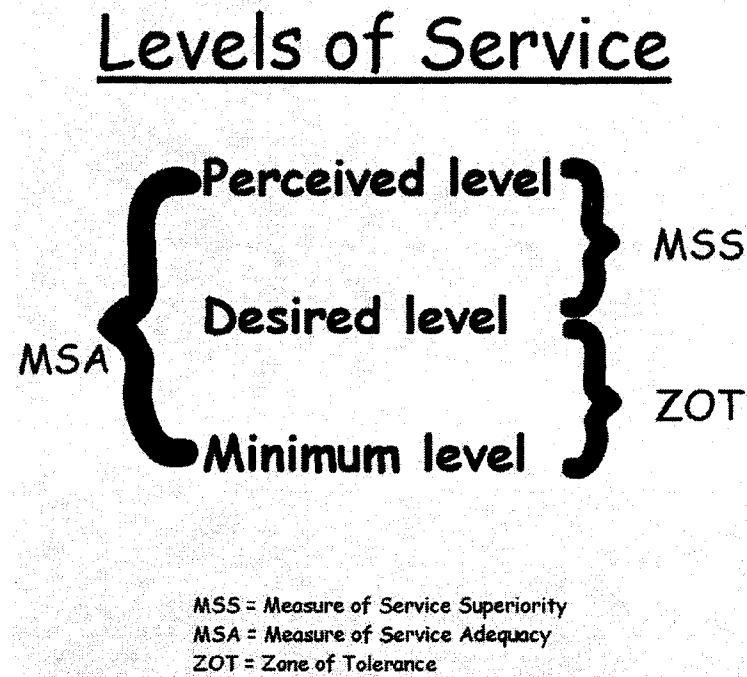


Figure 2. Levels of Service

Table 1. The Use of SERVQUAL in the Literature

Authors/Year	Setting	Reliability	Validity (goodness of fit)	Dimensions	Summary
MARKETING					
(Parasuraman, Zeithaml, and Berry 1988)	Customers of 1. Banks 2. Credit card companies 3. Repair and maintenance 4. Long-distance telephone	.52-.87	.72 to .86	Five	SERVQUAL offers good reliability and validity; Designed for use by retailers who can use it to improve service; Can be used for a broad spectrum of services
(Carman 1990)	1. Customers of a dental school patient clinic 2. A business school placement center 3. A tire store 4. A hospital	Mean of .75	Not examined	Six to eight depending on setting	The wording of some items may need to be customized before implementing in different settings
(Parasuraman, Berry, and Zeithaml 1991c)	Customers of five companies 1. Telephone repair 2. Retail banking A 3. Retail banking B 4. Insurance A 5. Insurance B	.80 to .93	.57 to .71	Five (six if 'tangibles is split into two dimensions)	SERVQUAL is a valid instrument that can be used to supplement qualitative and quantitative research

(Babakus and Boller 1992)	Customers of an electric and gas utility company	.67 to .83	.59	Not clear Five with poor fit Two (one with positive items and the second with negative items) may be the most viable	Suffers from a number of shortcomings; dimensionality may depend on the type of service; The use of gaps scores is problematic
(Cronin and Taylor 1992)	Customers of 1. banks 2. pest control 3. dry cleaning 4. fast food	.85 to .90	.79 to .86	Single clear service quality dimension	Performance-only measures may be an improved means of measuring service quality; Service quality is an antecedent of satisfaction
(Brown, Churchill, Jr., Nielson, & Peter, 1993)	Bank customers	.94	Not reported	Unidimensional	Performance-only measure performed better in regards to reliability and validity; Variance restriction is caused due to respondents selecting one of the top two positions 79% of the time
(Lam 1997)	College students were asked to complete four scales; one each for the bank, restaurant, supermarket, and retail chain they visited most often in the previous year	.68 to .95	Not reported	Five	They question the usefulness of the instrument; The scale is not stable over time, especially the performance items

(Brady and Cronin 2001)	Eight different industries	.90	Not reported	Nine poorly	Modifications are needed in order to make this an effective instrument
INFORMATION SYSTEMS					
(Kettinger and Lee 1994)	Undergraduate and graduate students using the service of a campus IS services	.82 to .90	.81 to .91	Four	The starting point of SERVQUAL in the IS literature; concluded that the instrument captures more detailed information than the existing UIS instrument
(Kettinger, Lee, and Lee 1995)	Undergraduate and graduate students using the service of a campus IS services in the following countries:				
	US	Not reported	.91	Four	
	Korea	Not reported	Admissibility check failed in CFA	Three	
	Hong Kong	Not reported	Admissibility check failed in CFA	Four	
	Netherlands	Not reported	.76	Four	

(Pitt, Watson, and Kavan 1995)	Financial institution	.90	Not reported	Seven	Examined the content validity, reliability, convergent validity, nomological validity, and discriminant validity. It was concluded that SERVQUAL is an appropriate instrument for researchers to use when measuring IS service quality.
	Consulting firm	.94	Not reported	Five	
	IS service firm	.96	Not reported	Three	
(Van Dyke, Kappelman, and Prybutok 1997)	IS users	.83 to .91	.51 to .71	Five	SERVQUAL suffers from a number of conceptual and empirical difficulties; 1.) operationalization of service quality as a gap score, 2.) ambiguity of constructs, 3.) unsuitability across industries, and 4.) poor reliability and validity
(Kettinger and Lee 1997)	IS users at a university	.67 to .88	.46	Five	The instrument has potential that needs to be examined more thoroughly

(Pitt, Watson, and Kavan 1997)	Financial institution, Consulting firm, Information service company	.62 to .96	.39 to .69	Five	Reliability of difference scores is not as bad as previously reported; the perceptions – expectations gap is far more rigorously grounded than that previously reported
(Van Dyke, Prybutok, and Kappelman 1999)	Customers of a single, large, international provider of information services	.36 to .65	.46	Four	Unstable dimensionality; poor predictive and convergent validity, and inadequate reliability
(Jiang, Klein, and Crampton 2000)	IS users at U.S. based companies	.76 to .90	.81	Four	Adds evidence to the four dimensions of SERVQUAL; SERVQUAL has a high level of reliability and validity
(Jiang, Klein, and Carr 2002)		.64-.87	.65-.87	Four	Adequate reliability, convergent validity, and discriminant validity
(Christopher L.Carr 2002d)	Help desk users	Not provided	.93	Four	Sufficient psychometric quality is not present in the expectations and perceptions measures to reliably calculate a difference score

* Cronbach's alpha = reliability

SERVQUAL Variations

The SERVQUAL instrument is one of the premiere instruments used to measure perceived service quality by customers (Van Dyke, Prybutok, and Kappelman 1999). It has a rich tradition in the marketing literature and has been validated numerous times in a variety of situations (Table 1).

The original version of SERVQUAL (Parasuraman, Zeithaml, and Berry 1988) consists of two section, both containing 22 questions. The first section measures service expectations of companies within a certain industry. The second section measures the customers' perception about a particular company in that industry.

Several changes were made to the original instrument in 1991 (Parasuraman, Berry, and Zeithaml 1991c). The modifications included:

- 1.) The "should" terminology was thought to contribute to unrealistically high expectation scores. Thus, slightly different wording was used to alleviate this potential problem. The revised wording focused on what customers would expect from companies that deliver excellent service. An example of an original and updated item follows.

Original item 2. Their physical facilities should be visually appealing.

Revised item 2. The physical facilities at excellent telephone companies will be visually appealing

- 2.) On the perception side of the scale, slight wording changes were made to make items more consistent with the revised expectation items.
- 3.) In the original SERVQUAL format, six of the 22 items were negatively worded. Empirical tests revealed the negatively worded items could potentially cause problems. The first indication of problems surfaced in higher standard deviations in the negatively worded items relative to the positively worded items. The larger deviations suggest the negatively worded items possibly confused the respondents. A second indication was a response from managers in the five study companies that participated in a pretest process. They indicated that the negatively worded items could be confusing. Lastly, the reliability coefficients resulting from the study group responses were lower than the 1988 study for responsiveness and empathy, which were the two dimensions that included the negatively worded items. Negatively worded items (6 perception and 6 expectation items) were reworded to be in a positive format (see Appendix A for the 1988 and 1991 SERVQUAL instruments).
- 4.) Two items were dropped and two were added. The items were substituted to more fully capture the dimensions and to incorporate suggestions made by managers who were involved in pre-testing the instrument. The items removed were “The appearance of the physical facilities of telephone companies should be in keeping with the type of services provided” and “Telephone company employees should get adequate support from their companies to do their jobs well.” The first item was removed because it was confusing and redundant with another item. The second item was replaced because it could be difficult for a

respondent outside of the organization to evaluate the amount of support an employee is given within their company. The removed items were replaced with “Materials associated with the service (such as pamphlets or statements) will be visually appealing in an excellent phone company” and “ Employees in excellent telephone companies will have the knowledge to answer customer questions.”

The next SERVQUAL version, in 1994, (Parasuraman, Zeithaml, and Berry 1994) was based on the zone of tolerance concept (Zeithaml, Berry, and Parasuraman 1993). The calculation of the zone of tolerance is achieved by subtracting minimum service from the desired service rating. The addition of minimum service resulted in a third column (in addition to one for perceived service and one for expected or desired service), thus the “three-column format” of SERVQUAL.

The use of gap measures, inherent in all SERVQUAL versions, has been challenged by some researchers (Christopher L.Carr 2002c; Peter, Churchill, Jr., and Brown 1993). They argue service quality, measured with the SERVPERF instrument, should be measured as perceived service quality only due to problems associated with gap scoring, greater variance explanation with SERVPERF, and the smaller number of items used (Bolton and Drew 1991; Churchill, Jr. and Suprenant 1982; Cronin and Taylor 1992; Woodruff, Cadotte, and Jenkins 1983). A comparison of the SERVQUAL and SERVPERF instruments provided support for the superiority of SERVPERF (Cronin and Taylor 1992). In particular, Cronin and Taylor conclude that more of the variation in service quality, as measured by R^2 , is measured by SERVPERF as compared to

SERVQUAL (Table 2). Additionally, the SERVPERF scale reduces the number of scale items from 66 (in the three-column format) or 44 (in the two-column format) to 22, thus making it more efficient, as well as reducing the potentially negative effects of gap measures, which will be discussed in a later section.

Table 2. SERVQUAL versus SERVPERF Correlation Scores

	Banking	Pest Control	Dry cleaning	Fast Food
SERVQUAL	.46511	.36515	.30747	.41534
SERVPERF	.47895	.38760	.44675	.47585

Criticisms of the SERVQUAL Instrument

Some researchers, Roy Teas in particular, have attacked the SERVQUAL instrument “both theoretically and empirically” (Grapentine 1998). Teas (1993) examined conceptual and operational issues related to SERVQUAL. In particular, he indicated that the P-E framework is of questionable validity due to the operational definition problems and dimensionality.

Teas (1993, 1994) argues that several vague or ambiguous references are included in SERVQUAL. Teas argued that vagueness and ambiguity inherent in the instrument introduced measurement error in the responses. An example Teas identified is the “minimum level of service customers are willing to accept” (Parasuraman, Zeithaml, and Berry 1994, pg. 203). He argues that “minimum level of service” and “willing to accept”

are vague terms because of the potential interpretation differences these phases could introduce.

Parasuraman, Zeithaml, and Berry (1988) found five dimensions of service quality: tangibles, reliability, responsiveness, assurance, and empathy. Cronin and Taylor (Cronin and Taylor 1992) examined the dimensionality of the SERVQUAL instrument by means of a confirmatory factor analysis. Their results showed that the 5-component structure proposed by Parasuraman, Zeithaml, and Berry (1988) was not confirmed in their research samples. Specifically, the chi square statistic values of 308.60 (banks), 486.16 (pest control), 402.60 (dry cleaning), and 364.14 (fast food) indicated a poor fit.

They then evaluated the unidimensionality of the 22 SERVQUAL items. A factor analysis of the SERVQUAL scale using the OBLIMIN oblique factor rotation procedure was then performed. The results showed all items loading on a single factor except item 19 (personal attention). They dropped the item and recalculated the reliability. The revised analysis suggested the scale could be treated as unidimensional. Other research results across multiple industries indicate the presence of two to nine dimensions (Babakus and Boller 1992; Brady and Cronin 2001; Carman 1990; Lam 1997). Table 6 summarizes SERVQUAL research in regards to the dimensionality aspect. No clear pattern of factors across industries has been established. Since dimensionality results have yet to be consistent between research, it is important for researchers to continue to compare factor structures across different samples (Chin and Todd 1995).

Validity of Service Quality Measures

Survey validity is concerned with the “extent to which a particular measure relates to other measures consistent with theoretically derived hypotheses concerning the concepts that are being measured” (Carmines & Zeller, 1979), p.23). Specifically, convergent validity measures the extent to which a measure correlates highly with other measures that are used to measure the same construct. Parasuraman, Zeithaml, and Berry (1988) used ANOVA to investigate the instrument’s convergent validity by examining the relationship between the SERVQUAL scores and an overall service quality rating of the firm being evaluated. Results indicated support for SERVQUAL’s convergent validity across four independent samples. Discriminant validity measures the extent to which a measure is “novel and does not simply reflect some other variable” (Churchill, Jr. 1979). Cronin and Taylor (1992), in their study of service quality across four industries (banking, pest control, dry cleaning, and fast food), showed the three service quality scales (SERVQUAL, SERVPERF, and overall service quality items) correlated more closely with each other than with measures of overall service quality, satisfaction, and purchase intention. Correlation coefficients are shown in Table 3, which is reproduced from Cronin and Taylor (1992).

Based on the convergent and discriminant validity tests performed, caution should be exercised when using the SERVQUAL instrument. A consistent pattern of validity has yet to be established (Table 1). Moreover, it appears that the perception scores may provide a better means of measuring service quality (Brady, Cronin, and Brand 2002a; Brady, Cronin, and Brand 2002b; Cronin and Taylor 1992; Cronin and Taylor 1994).

Table 3. Correlation Coefficients from Cronin and Taylor (1992)

	SERVQUAL	SERVPERF	Overall Service Quality	Satisfaction	Purchase Intent
SERVQUAL	1.0000				
SERVPERF	.8100	1.0000			
Overall Service Quality	.5430	.6012	1.0000		
Satisfaction	.5605	.5978	.8175	1.0000	
Purchase Intent	.3534	.3647	.5272	.5334	1.0000

The gap nature of the scores produced with the SERVQUAL instrument are another area of concern (Peter, Churchill, Jr., and Brown 1993). Research indicates that the gap nature of the SERVQUAL scores tends to cause reliability and validity problems (Peter, Churchill, Jr., and Brown 1993). Reliability of difference, or gap, scores are dependent on their component scores' reliability and their correlation to each other. The reliability of difference scores is decreased as the correlation of the component scores increase.

Cronbach's alpha, which is a commonly used measure of reliability, is not appropriate for difference scores because Cronbach's alpha overestimates the reliabilities of difference scores when component scores are highly correlated, as in the case of the SERVQUAL instrument (Van Dyke, Prybutok, and Kappelman, 1999). A second issue related to gap scores is associated with the gap score correlations with their components. Research has shown that difference scores are correlated with at least one of their component scores (Teas, Wacker, and Hughes 1979), causing discriminant validity problems and spurious correlations (Peter, Churchill, Jr., and Brown 1993). A third problem associated with difference scores is variance restriction, which presents itself when one of the component

scores used in gap measurements is consistently higher than the other component score. In the use of SERVQUAL, respondents may consistently rank service expectation items higher than actual service scores. Problems could arise from variance restriction with statistical analysis such as ordinary least squares, where dependent variables are assumed to have constant variance. Peter, Churchill, and Brown (1993) suggest Parasuraman, Zeithaml, and Berry (1988) may have encountered this problem.

History of Information Systems Service Quality Assessment

The SERVQUAL instrument was first introduced to the IS literature in 1994 by Kettinger and Lee. Their goal was to find an instrument that was a more comprehensive and current measure of user satisfaction than the existing User Information Satisfaction (UIS) instrument (Ives, Olson, and Baroudi 1983; Leithiser and Wetherbe 1986); Baroudi and Orlikowski (1988) comment that the UIS instrument was developed in, and is more applicable to, an era of large, centralized transaction processing systems rather than personal computer and network-based services environment which is prevalent today. The role of IS within organizations has changed from the development and operation of large hardware systems, to additionally providing technology transfer and distribution of services (Leithiser and Wetherbe 1986). As a result of systems becoming more distributed and services becoming more prevalent, a newer, more comprehensive measure should be used (Galletta and Lederer 1989; Parasuraman, Berry, and Zeithaml 1991b).

Kettinger and Lee (1994) slightly modified the 1991 SERVQUAL (Parasuraman, Berry, and Zeithaml 1991c) instrument from the marketing literature by making minor wording

changes to clarify the instrument for IS (see Appendix A for the different SERVQUAL versions). Examples of changes are included in Table 4.

Table 4. Sample SERVQUAL Item Wording Differences

Parasuraman, Berry, and Zeithaml – 1991	Kettinger and Lee - 1994
#4. Materials associated with the service (such as pamphlets or statements) will be visually appealing in an excellent telephone company.	#4. Materials associated with the service (such as documentation, equipment, screen displays, etc.) will be visually appealing in an excellent college computing services department.
#9. Excellent telephone companies will insist on error-free records.	#9. Excellent college computing services will maintain fully-functional equipment and software.

Kettinger and Lee (1994), as well as others (Jiang, Klein, and Carr 2002; Jiang, Klein, and Crampton 2000; Kettinger and Lee 1997; Kettinger, Lee, and Lee 1995; Van Dyke, Prybutok, and Kappelman 1999), found support for four dimensions (reliability, responsiveness, assurance, and empathy), along with a correlation of -0.651 between the perceived quality gap and the User Information Satisfaction (UIS) (Ives, Olson, and Baroudi 1983). The IS-adapted instrument was later tested for cultural affects (Kettinger, Lee, and Lee 1995) using student samples in the United States, Korea, Hong Kong, and the Netherlands. Four dimensions were discovered in the US sample: reliability, responsiveness, assurance, and empathy. A second order confirmatory factor analysis was then performed to determine if the same factor structure was present in the Korean, Hong

Kong, and Netherlands sample. The Korean and Hong Kong data failed to converge, “clearly indicating an unacceptable fit of our baseline measurement model” (Kettinger, Lee, and Lee 1995). The Korean and Hong Kong samples produced three and four factors respectively (see Table 5). The Netherlands data resulted in a Goodness-of-Fit Index of 0.764, thus implying only marginal fit. The authors posit cultural differences, IS maturity, and IS evolution may affect the discontinuity of factors.

In an attempt to attain strong validity and reliability scores, Kettinger and Lee (1994) performed a second-order confirmatory factor analysis. This process begins with factor analyzing correlations obtained from the first factor analysis. The result is a second-order factor analysis (Marsh and Hocevar 1988). A total of four iterations were performed, each time dropping multiple items that did not fit the model based on squared multiple correlations, standard residuals, and t-values. The resultant model contained 13 items, with a goodness of fit index score of .916. Appendix A contains the 13 item IS-adapted SERVQUAL instrument.

Pitt, Watson, and Kavan (Pitt, Watson, and Kavan 1995) deemed it necessary to assess the validity of the SERVQUAL instrument in an IS setting prior to using the instrument. They tested the appositeness of the SERVQUAL instrument in three organizations – a British accounting information management consulting firm, a South African financial institution, and a US information services business that provided credit reporting and collection services to other firms. With reference to content validity, they began by considering Parasuraman and coauthors’ (1988) thorough investigation of the SERVQUAL development with the use of focus groups. Pitt, Watson, and Kavan (1995)

themselves then reflected on features that could be unique to IS, thus affecting the validity of the instrument. They could not discern any unique features, therefore concluding the instrument possessed content validity.

Table 5. Factor Analysis from Kettinger, Lee, and Lee (1995)

Original Dimension	Original Item	Korean sample	Hong Kong sample
Tangible	Q1	Korean factor 3	Hong Kong factor 4
	Q2	Korean factor 3	Hong Kong factor 4
	Q3		Hong Kong factor 4
	Q4		Hong Kong factor 3
Reliability	Q5		Hong Kong factor 3
	Q6		Hong Kong factor 2
	Q7		Hong Kong factor 2
	Q8		Hong Kong factor 3
	Q9	Korean factor 3	
Responsiveness	Q10		Hong Kong factor 3
	Q11		
	Q12	Korean factor 2	Hong Kong factor 2
	Q13	Korean factor 2	
Assurance	Q14		Hong Kong factor 2
	Q15		
	Q16	Korean factor 2	Hong Kong factor 2
	Q17		Hong Kong factor 2
Empathy	Q18	Korean factor 1	
	Q19		Hong Kong factor 1
	Q20	Korean factor 1	Hong Kong factor 1
	Q21	Korean factor 1	Hong Kong factor 1
	Q22	Korean factor 1	Hong Kong factor 1

In terms of reliability as measured by Cronbach's alpha, results indicate that the reliability of each of the dimensions was sufficient. Convergent validity was also tested. The high correlation (.60 for the financial institution and information service firm and .82 for the consulting firm) between the overall service quality index and the response to the single-question overall quality indicated convergent reliability. The dimensionality of the instrument was unstable, with items loading into three, five, and seven factors for the IS service firm, consulting firm, and financial institution respectively (Table 6). Some

problems exist with regards to discriminant validity because some factors do not appear to be different from others. Although the similarity of the factors introduces some validity uncertainties, there is “not enough to discontinue consideration of SERVQUAL” (p. 181). Their overall contribution from this examination of the instrument is that “SERVQUAL passes content, reliability and convergent validity examination,” thus, “it is a suitable measure of IS service quality” (p. 181).

Table 6. Factor Loadings from Pitt, Watson, and Kavan (1995)

Original Dimension	Original Item	Financial Institution							Consulting Firm					IS Firm		
		F1	F2	F3	F4	F5	F6	F7	F1	F2	F3	F4	F5	F1	F2	F3
Tangible	Q1					.78				.78					.60	
	Q2			.81						.83						.78
	Q3			.73						.57						.77
	Q4			.64								.70				.85
Reliability	Q5	.75							.85						.86	
	Q6	.75							.57						.78	
	Q7	.70							.76						.76	
	Q8	.80							.80						.79	
	Q9	.69													.67	
Responsiveness	Q1								.69						.67	
	Q1							.61	.60					.58	.63	
	Q1							.77				.61	.73			
	Q1							.74					.70			
Assurance	Q1				.80								.67	.67		
	Q1				.75								.63	.64		
	Q1				.55								.82	.75		
	Q1								.56					.72		
Empathy	Q1		.87											.80		
	Q1		.82								.77					
	Q2						.75				.55			.80		
	Q2						.69				.65			.78		
	Q2						.63		.55					.74		

Criticisms of the IS-adapted SERVQUAL

Even though some researchers support the IS-adapted SERVQUAL instrument, others have remained skeptical (Christopher L.Carr 2002b; Van Dyke, Kappelman, and Prybutok 1997; Van Dyke, Prybutok, and Kappelman 1999). The main criticisms have revolved around some of the same issues related to the original Parasuraman, Zeithaml, and Berry instruments (1988, 1991), including ambiguity (especially related to expectations), the unsuitability of using a single measure across different industries, unstable dimensionality, and the use of disconfirmation scores (Christopher L.Carr 2002a; Van Dyke, Kappelman, and Prybutok 1997). Some argue that the instrument has only limited applicability in today's distributed networking environment since the instrument was originally designed for use in a transaction processing environment of the 1980s (Galletta and Lederer 1989; Melone 1990).

A newer criticism of the SERVQUAL instrument arose from Carr's (2002) recent analysis of technical support service interactions within an internal helpdesk. The findings indicate that the raw perception and expected values explain less variance than does the perceptions minus expected quality gap measure. The mere manipulation of the raw scores through subtraction should not better the psychometric properties of the data. Carr therefore concludes that the use of the gap scores is invalid and should not be used.

After further testing by Carr (2002), even the individual raw scores did not provide a valid measure of perceived and expected service. Further testing included tests for content validity, factor structure fit, indicator reliability, convergent and discriminant validity. With regards to content validity, Carr used the Kettinger and Lee (1994)

instrument which reduced the number of items by 40%, thus reducing domain coverage by 40% and leading to lowered content validity. A confirmatory factor analysis was performed to test the four-factor structure (reliability, responsiveness, assurance, and empathy) from previous research to the data. The SERVPERF component fit to the data was “very poor” (p. 285) while the fit of the SERVQUAL is “relatively good” based on

- 1.) root mean square error of approximation values of .095 and .076 for SERVPERF and SERVQUAL respectively (poor fit is indicated for values over .08)
- 2.) normed fit index scores of .83 and .91 for SERVPERF and SERVQUAL respectively (moderately good fit is indicated with a score greater than .90)
- 3.) non-normed fit index scores of .81 and .92 for SERVPERF and SERVQUAL respectively (moderately good fit is indicated with a score greater than .90).

Indicator reliability was measured with R^2 , which should be greater than .50 (Fornell and Larcker 1981). Only four of 13 SERVPERF and six of 13 SERVQUAL gap measures exhibited indicator reliability, thus lacking evidence to support indicator reliability. Convergent and discriminant validity were evaluated, with only the reliability measure indicating even partial convergent validity and “no construct exhibit[ing] invariant discriminant validity with all other constructs” (p. 287). In conclusion, Carr (2002) argues the raw scores as well as the gap score are all invalid, thus indicating that the SERVQUAL instrument should not be used in IS research.

SERVQUAL Summary

In summary, results have been mixed in regards to the acceptable use of the SERVQUAL instrument in the IS environment. Problems attributed to the SERVQUAL instrument include operational definitions that are vague and ambiguous, unstable dimensionality across industries, inconsistent validity across studies, and gap score issues that may result in reliability, validity, and variance restriction problems. These problems have added a certain level of uncertainty in the use of SERVQUAL as a measure of service quality.

Some have argued it appears the SERVQUAL instrument can be used as a good predictor of overall success (Fisk, Brown, and Bitner 1993). The instrument has been qualitatively and quantitatively investigated in both the marketing and IS literature. SERVQUAL has proven valid for measuring service quality along four dimensions (Jiang, Klein, and Crampton 2000; Kettinger and Lee 1994) with IS users across a spectrum of industries (Jiang, Klein, and Crampton 2000). Grover, Cheon, and Teng (1996) provide the only research using SERVQUAL in an application development environment. In their research, they conclude that SERVQUAL is a valid instrument to use in measuring the direct effect of service quality on outsourcing success in the case of application development outsourcing agreements, although it should be noted that only two (tangibles and reliability) of the five service quality dimensions were used in their study. Some of the more recent usages of the SERVQUAL instrument in the IS literature across a variety of industries suggests adequate reliability, convergent validity, and discriminant validity of the instrument (Jiang, Klein, and Carr 2002; Jiang, Klein, and Crampton 2000). The use of gap scores, which has been mentioned as a concern, is less of one since

Jiang, Klein, and Crampton (2002) provide support for the IS SERVQUAL gap score validity recently.

The strengths of the use of SERVQUAL in an application development outsourcing environment include the fairly consistent four-factor structure in the IS literature, recent validity and reliability support (Jiang, Klein, and Carr 2002; Jiang, Klein, and Crampton 2000), and the support provided for the instrument in the application development outsourcing environment (Grover, Cheon, and Teng 1996a). It appears that the major concerns for the use of SERVQUAL in an application development outsourcing environment are the validity and reliability of the instrument since a five-dimension SERVQUAL instrument (Figure 4) has yet to be tested in this environment. Another issue related to the use of service quality measurement is which instrument to use. The UIS instrument (Ives, Olson, and Baroudi 1983) has been used in the IS literature as a measure of service quality. Conceptually, satisfaction (which the UIS was designed to measure) and service quality are distinct concepts. Service quality “is a long-term attitude, whereas customer satisfaction is a transitory judgment made on the basis of a specific service encounter” (Cronin and Taylor 1994, pg. 126). Thus, the UIS should not be used to measure service quality. 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 (Bolton and Drew 1991; Churchill, Jr. and Suprenant 1982; Cronin and Taylor 1992; Woodruff, Cadotte, and Jenkins 1983). 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 SERVQUAL 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 et. al. (2002), and has proven reliable and valid.

Although no use of the full SERVQUAL instrument could be found related to IS outsourcing, it can be posited that the applicability of this instrument to IS outsourcing may be problematic. Expectations may be inflated as interactions between senior managers at both the customer and vendor are “characterized by enthusiasm and optimism” (Lacity & Willcocks, 2000a; pg. 370) during the evaluation phase of the outsourcing life cycle. Consequently, the outsourcing service consumer’s expectations are raised. This increase in expectations could affect the service quality disconfirmation score since the expectation score is high relative to the service expectations in other industries. The higher expectation scores can lead to variance restriction. This is a situation in which variance of a measure is restricted (Brown, Churchill, Jr., and Peter 1993). The restriction in this case would be due to the higher expectation scores. As a result of these higher expectation scores, the SERVQUAL score will be relatively low since it is measured as $Q=P-E$ (where Q = perceived service quality, P = perceived service, and E = expected service) and the value of Q must systematically decrease as E increases. The result is lower service quality scores, even though perceived quality may be high.

Service Quality and Outsourcing

Research has shown that quality of service in an outsourcing arrangement is positively linked with outsourcing success (McFarlan and Nolan 1995). Grover, Cheon, and Teng (1996) investigated the effect of service quality on the outsourcing of IS functions (Figure 3). They began by classifying IS functions into five categories: application

development and maintenance, systems operations, telecommunications and networks management, end-user support, and systems planning and management. Then, using a sample of top computer executives across multiple industries, they investigated the effect of service quality on outsourcing success using a modified SERVQUAL instrument. The SERVQUAL instrument used was derived from Parasuraman, Zeithaml, and Berry (1988), using only the two “dimensions of this instrument that seem particularly relevant to outsourcing practice – tangibles (physical facilities) and reliability (ability to perform service dependably and accurately)” (pg. 98).

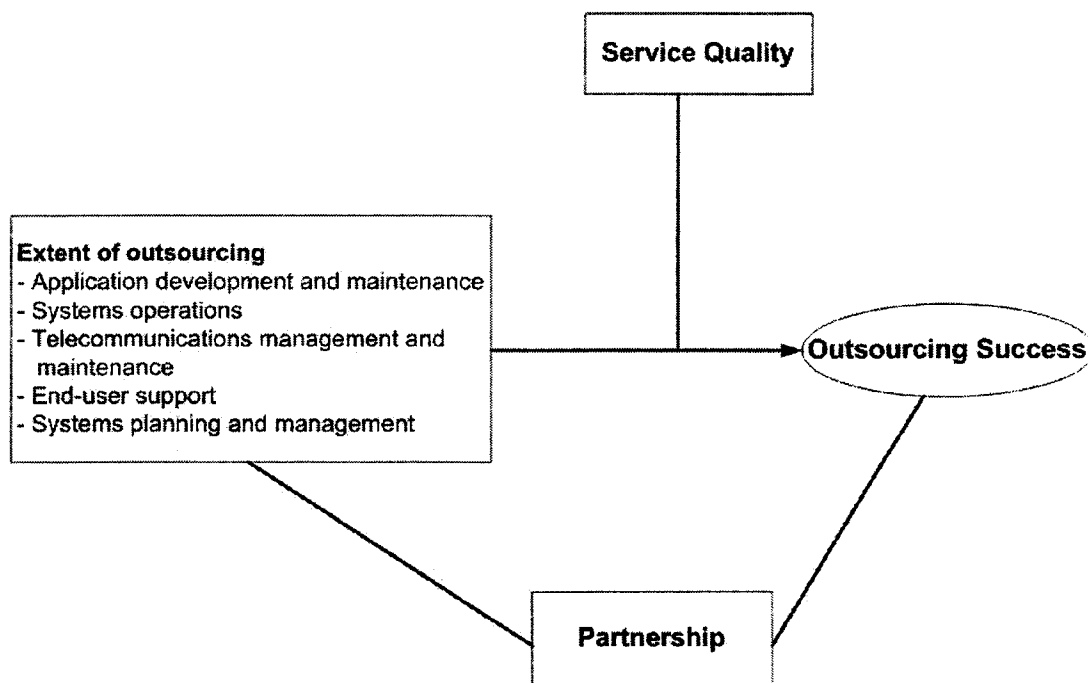


Figure 3. Grover, Cheon, and Teng 1996 Research Model

The base relationship in their research was between extent of outsourcing and outsourcing success. An examination of the base relationship for each of the five outsourcing functions reveals that only systems operations and telecommunications have positive, significant relationships with outsourcing success with correlation coefficients

of 0.31 for each function. Correlations between outsourcing success and application development and maintenance, end user support, and systems planning and management yields insignificant correlation coefficient values of 0.18, -0.04, and -0.05 respectively.

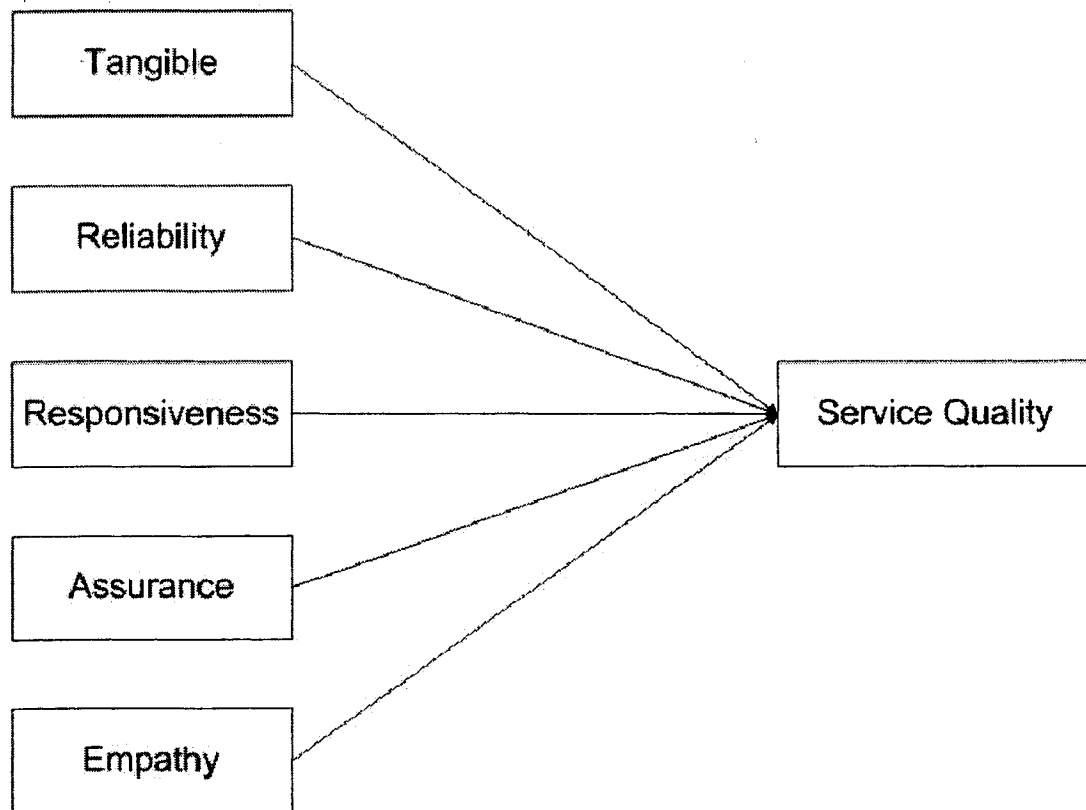


Figure 4. Service Quality Model

An examination of the moderating effects of service quality on the base relationship was also performed. Test results indicate an increase in the amount of variance explained in the base relationship when service quality is added to the regression equation. End-user support and systems planning and management showed significant moderating effects, while applications development showed a significant, negative effect. Interaction betas of 9.58 (p-value 0.000), 20.46 (p-value 0.007), and -3.07 (p-value 0.018) for end-user

support, systems planning and management, and applications development and maintenance respectively indicate that each of these functions has an effect on service quality. Telecommunications and systems operations displayed no explanatory powers. These results suggest that the effect of service quality is direct, rather than the hypothesized moderated, in the case of end-user support, systems planning and management, and application development. Specifically related to the current study on application development outsourcing discontinuation, the interaction beta of -3.07 suggests that as the level of application development outsourcing increases, the level of service quality decreases. The perception of being locked into a service agreement with an application development outsourcing vendor, as discussed in the switching costs section later, may provide the negative reaction of the service quality variable.

Service Quality Summary

The delivery of high quality service to customers has been shown to result in measurable benefits such as profit, cost savings, and market share (Zeithaml, Berry, & Parasuraman, 1988) as well as being considered a crucial strategy for success and survival in a competitive environment (Reichheld & Sasser, 1990; Zeithaml, Berry, & Parasuraman, 1996; Zeithaml, Parasuraman, and Berry 1985). Firms believe enough in service quality that they are using it as their strategy to position themselves in the marketplace. (Brown & Swartz, 1989; Parasuraman, Zeithaml, and Berry 1988).

Service quality has been shown to affect purchase intentions within the banking, pest control, dry cleaning, and fast food industries (Cronin and Taylor 1992). 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 (Boulding, Kalra, Staelin, & Zeithaml, 1993). 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 (Zeithaml, V. A. et al., 1996). Research was conducted in the computer manufacturer, retail chain, automobile insurer, and life insurer industries.

Research relating service quality to resultant outcomes has focused on intentions rather than post-hoc analysis of service quality outcomes. Results have shown that service quality does influence behavioral intentions. Research investigating post-hoc analysis of service quality on outsourcing discontinuations is lacking and will thus be the focus of this research.

Satisfaction Introduction

Satisfaction has been an important construct in the IS and marketing channel relationship literature (Geyskens, Steenkamp, and Kumar 1999). Results of empirical studies in the marketing literature indicate satisfied channel members are less likely to exit the relationship and file lawsuits against other channel members (Hunt and Nevin 1974; Ruekert and Churchill, Jr. 1984). The IS outsourcing literature, however, has yet to use satisfaction as an antecedent of consumer intent to switch vendors or backsource. The IS literature related to satisfaction has focused on assessing satisfaction, diagnosing possible causes of dissatisfaction, and suggesting corrective action (Lawrence and Low 1993; McKeen, Gulmaraes, and Wetherbe 1994; Melone 1990; Montazemi 1988; Shaw, DeLone, and Niederman 2002).

User Satisfaction in Information Systems

The user satisfaction construct has occupied an important place in IS literature (Doll, Raghunathan, Lim, and Gupta 1995). A myriad of factors have been shown to affect user satisfaction (Bailey and Pearson 1983). Examples are shown in Table 7.

User satisfaction research in the information systems environment is based on the works of Bailey and Pearson (1983) and Ives, Olson, and Baroudi (1983). These authors describe information systems satisfaction as the sum of feelings resulting from users' beliefs about the extent to which an information system available to them allows them to meet their information requirements. As a result of these authors' efforts, the User Information Satisfaction (UIS) scale was developed.

Table 7. Factors Used in IS Satisfaction Research

Factor	Study
Developer skills	(Yoon, Guimaraes, and O'neal 1995)
End-user characteristics	(Yoon, Guimaraes, and O'neal 1995)
Hardware standards	(Mirani and King 1994)
Management support	(Yoon, Guimaraes, and O'neal 1995)
System complexity	(McKeen, Gulmaraes, and Wetherbe 1994)
Task complexity	(McKeen, Gulmaraes, and Wetherbe 1994)
User influence	(McKeen, Gulmaraes, and Wetherbe 1994)
User involvement	(Yoon, Guimaraes, and O'neal 1995)
User participation	(Doll and Torkzadeh 1988; McKeen, Gulmaraes, and Wetherbe 1994; Montazemi 1988)
User training	(Mirani and King 1994)
User-developer communication	(McKeen, Gulmaraes, and Wetherbe 1994)

The UIS instrument (Bailey and Pearson 1983) has been used successfully to measure satisfaction in the IS environment (Table 8). “Results suggest its potential usefulness in measuring user satisfaction in a traditional IS environment, where an internal IT department within an organization provides and monitors all services” (Sengupta and Zviran, 1997, p. 415). The UIS is the most widely used satisfaction instrument in IS (Doll, Raghunathan, Lim, and Gupta 1995). Support has even been found for the UIS instrument in IS.

Table 8. Major Research Using the UIS Instrument

Authors/year	UIS used	Setting	Research method	Summary
(Ives, Olson, and Baroudi 1983)	Modified the 39 item Bailey and Pearson; result was 13 item "short form"	800 production managers in U.S. manufacturing organizations	Two mailings; First- Bailey and Pearson instrument Second- (two months later) 4-item measure of IS satisfaction	Short form is both reliable and valid
(Bailey and Pearson 1983)	Development of the 39 items	Data processing middle managers	A lit review was performed (and later interviews with IT executives) to determine factors thought to impact satisfaction; The instrument was finally administered to the middle managers interviewed	The resulting 39 item instrument is valid and reliable
(Montazemi 1988)	Modified and reduced 35 item Bailey and Pearson instrument	153 users in small firms in southern Ontario	Instrument administered via postal mail	Instrument was reliable and valid
(Baroudi and Orlikowski 1988)	Short form	358 transaction processing systems users	UIS administered via a contact person at one of 26 firms	Validity and reliability were supported; 3 underlying factors

(Galletta and Lederer 1989)	Short-form; Four additional items measuring overall satisfaction	Executives and managers in an executive MBA program	Subjects were divided into "control" group, "satisfied" group, and "unsatisfied" group and administered the instrument; test and retest was performed within a 2.5 hour period	Test/retest failure suggests unreliability of the instrument
(Lawrence and Low 1993)	Modified Bailey and Pearson	Users of two large systems in a government corporation	Instrument mailed to approximately 450 users of a new IS system	Highly reliable instrument
(Kettinger and Lee 1994)	Short-form; Four summary USISF items by Galletta and Lederer	Undergraduate and graduate students assessed the college IS services	Instrument administered in class and returned via campus mail	Reliable and valid instrument; confirmatory factor analysis yielded three factors, although four items were deleted
(Doll, Raghunathan, Lim, and Gupta 1995)	Short form	224 IS users across a wide variety of industries	The data was used to compare six alternative models of satisfaction	Results show that the UIS model with four first-order factors and one second-order factor provides the best model-data fit
(Sengupta and Zviran 1997)	Short form	680 users of a hospital information system at three naval hospitals	Stratified random sample was used	Factor analysis revealed 4 factors in the outsourcing environment; Reliability and validity are supported

(Jiang, Klein, and Crampton 2000)	Short form	200 IS users in US-based organizations	Initial contact via phone, instrument sent via mail and phone contact made with nonrespondents	Instrument is reliable and valid; 3 factors were found after dropping 2 items Links the SERVQUAL gap scores to overall satisfaction as measured by the UIS
(Shaw, DeLone, and Niederman 2002)	Short form	IS users at a large, private university	Administered 2 instruments: 1 to measure user support factors and the second was the UIS	Valid instrument; 3 factors found

outsourcing (Sengupta and Zviran 1997), where it has been found to be both a reliable and valid measure of IS satisfaction. A brief development history of the instrument follows.

Bailey and Pearson Research

The original UIS instrument was developed in 1983 (Bailey and Pearson 1983). The authors began with a review of 22 computer and user satisfaction studies. From their review, they compiled a list of 36 distinct factors. After compilation of the 36 factors, three data processing professionals were asked to review the list. The professionals suggested two additional factors be added. Next, interviews were conducted with 32 middle managers in eight organizations. The managers were asked to reflect on relations with past and current computer products and services. The interviews were taped and then analyzed to determine factors mentioned in the interview. Factors from each respondent were sent to them and they were asked to rank the importance of each. A total of 13 factors were mentioned that were not included in the list of 38 factors. Of these 13, one was mentioned four times and was thus added to the list for a total of 39 factors.

The ensuing step was to develop an instrument which measured user's reactions to the factors already captured. The authors decided to measure these factors using a bi-dimensional scale which used the semantic differential technique to measure the meaning of concepts (Osgood 1962). The technique uses adjectives to describe the way a respondent feels regarding a concept. A total of four bipolar adjective pairs were used for each item (and one satisfied/unsatisfied pair added for later validity testing), with a seven-point Likert scale using the following adverb qualifiers: extremely, quite, slightly,

neither/equally, slightly, quite, and extremely. Table 9 provides the scale and a list and description of the 39 factors.

The adjective pair responses were assigned values of -3, -2, -1, 0, 1, 2, and 3 to each binomial pair response, with -3 being anchored on the “extremely” negative side of the scale. Item satisfaction was then calculated by averaging the four adjective scores per item. Summing the individual item scores resulted in an overall satisfaction score for the user. A final normalization process was performed to overcome misrepresentation resulting from neutral, or zero-scored, responses. A more detailed discussion of this process is included in the methodology section.

The instrument was then sent to the 32 middle managers previously interviewed in hopes of comparing their responses to their verbal assessment delineated in the original interview session. Between four and six weeks passed between the interview and instrument administration. Twenty-nine of 32 middle managers responded with completed instruments.

An analysis of variance was used in reliability testing to estimate measurement errors. Total variance was composed of components because of pair differences, differences between each subject, and measurement error. Reliability for the instrument was calculated for each factor, with 32 of 39 coefficients greater than .90. Coefficient average was .93, thus only a small amount of response variance was due to measurement error. Reliability of the instrument is thus supported.

Table 9. UIS Instrument

<p><u>Top management involvement</u>: The positive or negative degree of interest, enthusiasm, support, or participation of any management level above the user's own level toward computer-based information systems or services or toward the computer staff which supports them.</p> <p style="text-align: center;">strong vs weak consistent vs inconsistent good vs bad significant vs insignificant</p>
<p>* <u>Organizational competition with the EDP unit</u>: The contention between the respondent's organizational unit and the EDP unit when vying for organizational resources or for responsibility for success or failure of computer-based information systems or services of interest to both parties.</p> <p style="text-align: center;">productive vs destructive rational vs emotional low vs high harmonious vs dissonant</p>
<p><u>Priorities determination</u>: Policies and procedures which establish precedence for the allocation of EDP resources and services between different organizational units and their requests.</p> <p style="text-align: center;">fair vs unfair consistent vs inconsistent just vs unjust precise vs vague</p>
<p>* <u>Charge-back method of payment for services</u>: The schedule of charges and the procedures for assessing users on a pro rata basis for the EDP resources and services that they utilize.</p> <p style="text-align: center;">just vs unjust reasonable vs unreasonable consistent vs inconsistent known vs unknown</p>
<p><u>Relationship with the EDP staff</u>: The manner and methods of interaction, conduct, and association between the user and the EDP staff.</p> <p style="text-align: center;">harmonious vs dissonant good vs bad cooperative vs uncooperative candid vs deceitful</p>

<p><u>Communication with the EDP staff:</u> The manner and methods of information exchange between the user and the EDP staff.</p> <p>harmonious vs dissonant productive vs destructive precise vs vague meaningful vs meaningless</p>
<p><u>Technical competence of the EDP staff:</u> The computer technology skills and expertise exhibited by the EDP staff.</p> <p>current vs obsolete sufficient vs insufficient superior vs inferior high vs low</p>
<p><u>Attitude of the EDP staff:</u> The willingness and commitment of the EDP staff to subjugate external professional goals in favor of organizationally directed goals and tasks.</p> <p>user-oriented vs self-centered cooperative vs belligerent courteous vs discourteous positive vs negative</p>
<p><u>Schedule of products and services:</u> The EDP center timetable for production of information system outputs and for provision of computer-based services.</p> <p>good vs bad regular vs irregular reasonable vs unreasonable acceptable vs unacceptable</p>
<p><u>Time required for new development:</u> The elapsed time between the user's request for new application and the design, development, and/or implementation of the application systems by the EDP staff.</p> <p>short vs long dependable vs undependable reasonable vs unreasonable acceptable vs unacceptable</p>
<p><u>Processing of change requests:</u> The manner, method, and required time with which the EDP staff responds to user requests for changes in existing computer-based information systems or services.</p> <p>fast vs slow timely vs untimely simple vs complex flexible vs rigid</p>

* Vendor support: The type and quality of the service rendered by a vendor, either directly or indirectly, to the user to maintain the hardware or software required by that organizational status.

skilled vs bungling
sufficient vs insufficient
eager vs indifferent
consistent vs inconsistent

Response/turnaround time: The elapsed time between a user-initiated request for service or action and a reply to that request. Response time generally refers to the elapsed time for terminal type request or entry. Turnaround time generally refers to the elapsed time for execution of a program submitted or requested by a user and the return of the output to that user.

fast vs slow
good vs bad
consistent vs inconsistent
reasonable vs unreasonable

Means of input / output with EDP center: The method and medium by which a user inputs data to and receives output from the EDP center.

convenient vs inconvenient
clear vs hazy
efficient vs inefficient
organized vs disorganized

Convenience of access: the ease or difficulty with which the user may act to utilize the capability of the computer system.

convenient vs inconvenient
good vs bad
easy vs difficult
efficient vs inefficient

Accuracy: The correctness of the output information.

accurate vs inaccurate
high vs low
consistent vs inconsistent
sufficient vs insufficient

Timeliness: The availability of the output information at a time suitable for its use.

timely vs untimely
reasonable vs unreasonable
consistent vs inconsistent
punctual vs tardy

<p><u>Precision:</u> The variability of the output information from that which it purports to measure.</p> <p>sufficient vs insufficient consistent vs inconsistent high vs low definite vs uncertain</p>
<p><u>Reliability:</u> The consistency and dependability of the output information.</p> <p>consistent vs inconsistent high vs low superior vs inferior sufficient vs insufficient</p>
<p><u>Currency:</u> The age of the output information.</p> <p>good vs bad timely vs untimely adequate vs inadequate reasonable vs unreasonable</p>
<p><u>Completeness:</u> The comprehensiveness of the output information content.</p> <p>complete vs incomplete consistent vs inconsistent sufficient vs insufficient adequate vs inadequate</p>
<p>* <u>Formal of output:</u> The material design of the layout and display of the output contents.</p> <p>good vs bad simple vs complex readable vs unreadable useful vs useless</p>
<p>* <u>Language:</u> The set of vocabulary, syntax, and grammatical rules used to interact with the computer</p> <p>simple vs complex powerful vs weak easy vs difficult easy-to-use vs hard-to-use</p>

<p><u>Volume of output:</u> The amount of information conveyed to a user from computer-based systems. This is expressed not only by the number of reports or outputs but also by the voluminousness of the output contents.</p> <p>concise vs redundant sufficient vs insufficient necessary vs unnecessary reasonable vs unreasonable</p>
<p><u>Relevancy:</u> The degree of congruence between what the user wants or requires and what is provided by the information products and services.</p> <p>useful vs useless relevant vs irrelevant clear vs hazy good vs bad</p>
<p><u>Error recovery:</u> The methods and policies governing correction and rerun of system outputs that are incorrect.</p> <p>fast vs slow superior vs inferior complete vs incomplete simple vs complex</p>
<p>* <u>Security of data:</u> The safeguarding of data from misappropriation or unauthorized alteration or loss.</p> <p>secure vs insecure good vs bad definite vs uncertain complete vs incomplete</p>
<p><u>Documentation:</u> The recorded description of an information system. This includes formal instructions for the utilization of the system.</p> <p>clear vs hazy available vs unavailable complete vs incomplete current vs obsolete</p>
<p><u>Expectations:</u> The set of attributes or features of the computer-based information products or services that a user considers reasonable and due from the computer-based information support rendered within his organization.</p> <p>pleased vs displeased high vs low definite vs uncertain optimistic vs pessimistic</p>

Understanding of systems: The degree of comprehension that a user possesses about the computer-based information systems or services that are provided.

high vs low
sufficient vs insufficient
complete vs incomplete
easy vs hard

Perceived utility: The user's judgment about the relative balance between the cost and the considered usefulness of the computer-based information products or services that are provided. The costs include any costs related to providing the resource, including money, time, manpower, and opportunity. The usefulness includes any benefits that the user believes to be derived from the support.

high vs low
positive vs negative
sufficient vs insufficient
useful vs useless

Confidence in the systems: The user's feelings of assurance or certainty about the systems provided.

high vs. low
strong vs. weak
definite vs. uncertain
good vs. bad

Feeling of participation: The degree of involvement and commitment which the user shares with the EDP staff and others toward the functioning of the computer-based information systems and services.

positive vs. negative
encouraged vs. repelled
sufficient vs. insufficient
encouraged vs. repelled

Feeling of control: The user's awareness of the personal power or lack of power to regulate, direct or dominate the development, alteration, and /or execution of the computer-based information systems or services which serve the user's perceived function.

high vs low
sufficient vs insufficient
precise vs vague
strong vs weak

<p><u>Degree of training:</u> The amount of specialized instruction and practice that is afforded to the user to increase the user's proficiency in utilizing the computer capability that is unavailable.</p> <p>complete vs incomplete sufficient vs insufficient high vs low superior vs inferior</p>
<p><u>Job effects:</u> The changes in job freedom and job performance that are ascertained by the user as resulting from modifications induced by the computer-based information systems and services.</p> <p>liberating vs inhibiting significant vs insignificant good vs bad valuable vs worthless</p>
<p><u>Organizational Position of the EDP Function:</u> The hierarchical relationship of the EDP function to the overall organizational structure.</p> <p>appropriate vs inappropriate strong vs weak clear vs hazy progressive vs regressive</p>
<p><u>Flexibility of Systems:</u> The capacity of the information system to change or to adjust in response to new conditions, demands, or circumstances.</p> <p>flexible vs rigid versatile vs limited sufficient vs insufficient high vs low</p>
<p><u>Integration of systems:</u> The ability of systems to communicate/transmit data between systems servicing different functional areas.</p> <p>complete vs incomplete sufficient vs insufficient successful vs unsuccessful good vs bad</p>

Content, predictive, and construct validity tests were performed. Content validity examines if all aspects of an attribute are being measured. Bailey and Pearson (pg. 536) comment that the methodology used to obtain and modify the factor list suggests content validity. Additionally,

a product moment correlation coefficient was calculated for each adjective pair combination. Scales which purport to measure the same attribute should be positively correlated. A student t-distribution was used to test the significance of the resulting coefficients. All but 1 of the 234 coefficients was significant at the 0.05 level.

Next, tests were used to examine if the instrument could discriminate between satisfied and dissatisfied responses. The responses were separated into satisfied and unsatisfied groups. Group averages were calculated and the difference between group averages was examined. In 97 of the 156 pairs, the difference was greater than three intervals. Based on the research and interview methodology, coefficient testing, and discrimination testing, it can be concluded that the instrument is content valid.

Predictive validity is the ability of an instrument to predict outside the confines of the current research. Predictive validity is typically accomplished by administering a similar, established instrument and comparing instrument results. The researchers had difficulty finding an instrument that tested similar concepts. In its absence, the respondents were asked to rate their overall satisfaction. The correlation between the overall satisfaction and instrument results was 0.79, which is “high considering the fact that the self-assessment score could only take on one of seven values” (pg. 536).

A second test, using the satisfied/unsatisfied adjective pair, was executed to estimate predictive validity. Correlation coefficients ranged from 0.97 to 0.75, with an average of 0.91. Results of these two tests indicate the instrument does predict self-assessed satisfaction.

Construct validity was examined using the self-assessed rankings from the factors. In the context of this research, satisfaction factors as indicated by respondents should be important in the instrument as well to achieve construct validity. The Spearman Rank Correlation Coefficient was calculated at 0.743. The list of factors and their importance rankings coincide with past IS satisfaction research, therefore providing support for construct validity.

The Bailey and Pearson UIS instrument made a significant contribution to the IS satisfaction literature. The first contribution was a definition of computer user satisfaction. The second contribution was the construction of a reliable and valid IS satisfaction instrument.

Ives, Olson, and Baroudi Research

Ives, Olson, and Baroudi (1983) evaluated the 39-item Bailey-Pearson instrument with a sample of 800 production managers in U.S. manufacturing organizations. The first mailing included the Bailey-Pearson instrument. The second mailing used a four-item measure of IS satisfaction which can be found in Table 10 (Olson and Ives 1981).

Table 10. Olson and Ives General UIS Model

How adequately do you feel the data processing group meets information processing needs of your area of responsibility?	Very well Adequately Marginally Poorly
How adequately do you feel the data processing group meets the needs of the broader class of users they serve?	Very well Adequately Marginally Poorly
Data processing support can be judged on two criteria: efficiency and effectiveness. <i>Efficiency</i> deals with how well they do what they do. Are reports on time? Are projects developed within budget? <i>Effectiveness</i> takes a broader focus. Are they doing the right things? Are critical “life-blood” applications being developed? Are new computer technologies being successfully integrated into the organization?	
How <i>efficient</i> do you feel the data processing group is?	Very efficient Fairly efficient Somewhat inefficient Very inefficient
How <i>effective</i> do you feel the data processing group is?	Very efficient Fairly efficient Somewhat inefficient Very inefficient

The four goals set by Ives *et al* include:

- 1.) replicate Bailey-Pearson results including validity of the instrument
- 2.) reinforce the validity through further testing of the instrument
- 3.) reduce the overall length of the instrument while maintaining the reliability and existing scale structure
- 4.) develop a “short form” that is a global measure of IS satisfaction

Each of the 39 items were analyzed for reliability, content validity, predictive validity, and construct validity. With respect to reliability, Cronbach’s alpha was used on the inter-item and overall scores. Individual reliability scores ranged from 0.82 to 0.97. An overall

instrument reliability measure of 0.97 was calculated as well. The results were similar to those reported by Bailey and Pearson.

All inter-item correlations were positive and significant at the 0.001 level. Correlation between the 39 items and the four-item instrument showed significance at the 0.001 level. The correlations only provide limited support for content validity by themselves. When considering the correlations and the methodology in which Bailey and Pearson used in developing the 39 factors, strong support for content validity is provided.

To test for predictive validity, Ives *et al* took the overall score from the four-item instrument and correlated it against the overall score obtained from the Bailey and Pearson instrument. A correlation of 0.55 was obtained, which was significant at the 0.001 level. Similar results by Bailey and Pearson indicate predictive validity of the instrument.

Construct validity was tested for by using factor analysis and score correlation. Factor analysis provided 22 items loading at greater than 0.50. The factors include EDP (electronic data processing) staff and service, information product, vendor support, information product, and knowledge or involvement. Although no a priori factor loadings were provided, the factor analysis supports the existence of a logical scale structure. The second construct validity test correlated total scores and item scores. All 39 correlations were significant at the 0.001 level. Thus, both tests provide positive support for construct validity.

After testing for reliability and validity of the 39-item instrument, Ives *et al* next attempted to improve instrument quality. The first approach was to rank items by reliability, content validity, and construct validity scores. The ten lowest scoring items in each category were examined. A total of six items were removed, each of which is marked in Table 9 with an asterisk. Support from Bailey and Pearson (1983) was used in the elimination process by considering the importance rankings submitted by the middle managers.

The number of total items was evaluated and steps were taken to decrease the amount of time required to complete the instrument from the 20 – 30 minutes required of the long form. Inter-item correlations were calculated using the four adjective pairs for each item. The two lowest scoring pairs were dropped from each item. After removing the items, correlations were again calculated using the existing data from the responses obtained earlier. Support was provided for the revised instrument based on the revised validity and reliability scores.

To again decrease the amount of time required to complete the instrument, and to provide an overall measure of IS satisfaction, a “short form” instrument was constructed. The first step was to remove those items that contained “undesirable psychometric characteristics” (pg. 791). Next, only those items whose factor loading score was at least 0.50 were considered. Third, the remaining items were only constructed with the two adjective pairs remaining from the earlier elimination process. The resulting short form instrument included 13 items and was then empirically tested. Total satisfaction from the short form items was correlated against the items not included in the short form, resulting in a

correlation of 0.90 (significant at the 0.001 level). The short form total was also correlated with the four-item satisfaction measure, providing a correlation of 0.54 (significant at the 0.001 level). The correlation scores of 0.90 and 0.54 provide evidence that the short form provides an adequate representation of the original Bailey and Pearson instrument.

As a result of the factor analysis performed during the short-form development, three factors were found. Each of the factors is described below (Baroudi and Orlikowski 1988)

EDP Staff and Services. This factor is the respondents' self-reported assessment of the attitude and responsiveness of the EDP staff as well as the quality of their relationship with the EDP staff.

Information Product. This factor is the respondents' self-reported assessment of the quality of output delivered by the information system.

Knowledge and Involvement. This factor is the respondents' self-reported assessment of the quality of training provided, their understanding of the systems, and their participation in its development.

Baroudi and Orlikowski Research

The next step in the evolution of the UIS instrument examined the short-form psychometrically (Baroudi and Orlikowski 1988). Three hundred and fifty eight transaction processing system users across multiple industries were administered the short-form UIS instrument. Construct validity tests were replicated from earlier research

(Ives, Olson, and Baroudi 1983) with similar results. Correlations between each item and the total UIS score resulted in scores ranging from 0.35 to 0.69 (11 of 13 were greater than 0.50), all positive and significant at the 0.001 level. Factor analysis resulted in three factors, with all items loading on the same factors as in the Ives *et al* research.

Convergent validity was determined by dividing the respondents into two groups, one containing users in organizations which generally were satisfied with their information systems based on interviews. The second group contained users from organizations who were generally not satisfied with their information system. The mean score for the satisfied group was 14.5, versus -5.1 for the dissatisfied group. A t-test was used to determine that the groups were significantly different at the 0.001 level. The data suggests convergent validity of the instrument.

Reliability was examined using Cronbach's alpha for the two adjective pair scores in each item. All reliabilities were above 0.80, with a total score of 0.89. This evidence suggests the short-form UIS is internally consistent and reasonably free of measurement error.

Satisfaction in Outsourcing

Sengupta and Zviran (1997) used the UIS short-form in three naval hospitals that outsourced the development and maintenance of an application system. Using an exploratory factor analysis with an eigenvalue cutoff of one, the number of factors to use was shown to be four. Factor analysis using varimax rotation yielded four factors which are shown in Table 11. A confirmatory factor analysis supports the four factors.

A fundamental difference between the Sengupta and Zviran results and past research is in the number of factors. In particular, the contractor's services is added to the other three which have been fairly consistent across research. It is interesting to note that in earlier research (Ives, Olson, and Baroudi 1983), a fourth factor was found in a 22-item UIS version. This factor was removed because only one item loaded on the factor. Similarities also exist with other past research (Doll, Raghunathan, Lim, and Gupta 1995) that confirmed the existence of a fourth factor, also including items 2 and 12. Doll, *et al.* named the fourth factor EDP services, which would be the basic equivalent of outsourcing services in an outsourcing environment.

The fourth factor supports the position that the application of the UIS in an outsourcing environment requires the acknowledgement of the performance of the outside vendor (Sengupta and Zviran 1997). Sengupta and Zviran suggest the development of an outsourcing specific version of the UIS, which could begin with revisiting the Bailey and Pearson (1983) instrument. The Bailey-Pearson instrument addressed "issues that have a great impact on combined outsourcing environments, such as processing of change requests, vendor support, documentation, degree of training, job effects, and integration of systems " (pg. 419).

Table 11. Sengupta and Zviran (1997) Factor Loadings

Item #	Question/variable	Management Information Department Staff & Services	Contractor's services	Information product output	Knowledge and involvement
1	Relationship with staff	0.75			
6	Attitude of staff	0.79			
11	Communication with staff	0.83			
2	Processing of change requests		0.58		
12	Time required for new development		0.69		
7	Output reliability			0.77	
8	Output relevance			0.61	
9	Output accuracy			0.75	
10	Output precision			0.71	
13	Output completeness			0.59	
3	Degree of training provided				0.48
4	User's understanding of system				0.79
5	User's feeling of participation				0.51
Cronbach's alpha		0.89	0.68	0.87	0.75

Consequences of Satisfaction

In addition to the antecedents of satisfaction described above, the literature also suggests intent to repurchase or continue a relationship as a common consequence of satisfaction (Anderson and Sullivan 1993; Bolton, 1998; Bolton and Drew 1991; Oliva, Oliver, and MacMillan 1992; Oliver 1981; Oliver 1980; Patterson, Johnson, and Spreng 1997; Ping 1994). The statistical relationship is generally small, but significant (Bolton, R., 1998). Research indicates that repurchase intentions are impacted more heavily by dissatisfaction than satisfaction. Another interesting result is that support has also been found for indirect effects of satisfaction on intent through service quality (Bolton and Drew 1991). This support for satisfaction as an antecedent of repurchase intentions is ultimately important in the current research as these intentions may be seen as proxies for the decision to cancel an outsourcing agreement.

Conclusion

Satisfaction has continued to play an important role in IS research and use. The antecedents of satisfaction have been clearly identified and supported in the literature. The User Information Satisfaction (UIS) instrument will be used in the current research due to recent empirical support for the measure in the outsourcing environment (Sengupta and Zviran 1997) and due to the considerable efforts put forth by Bailey and Pearson (1983) in the development of the instrument (Figure 5).

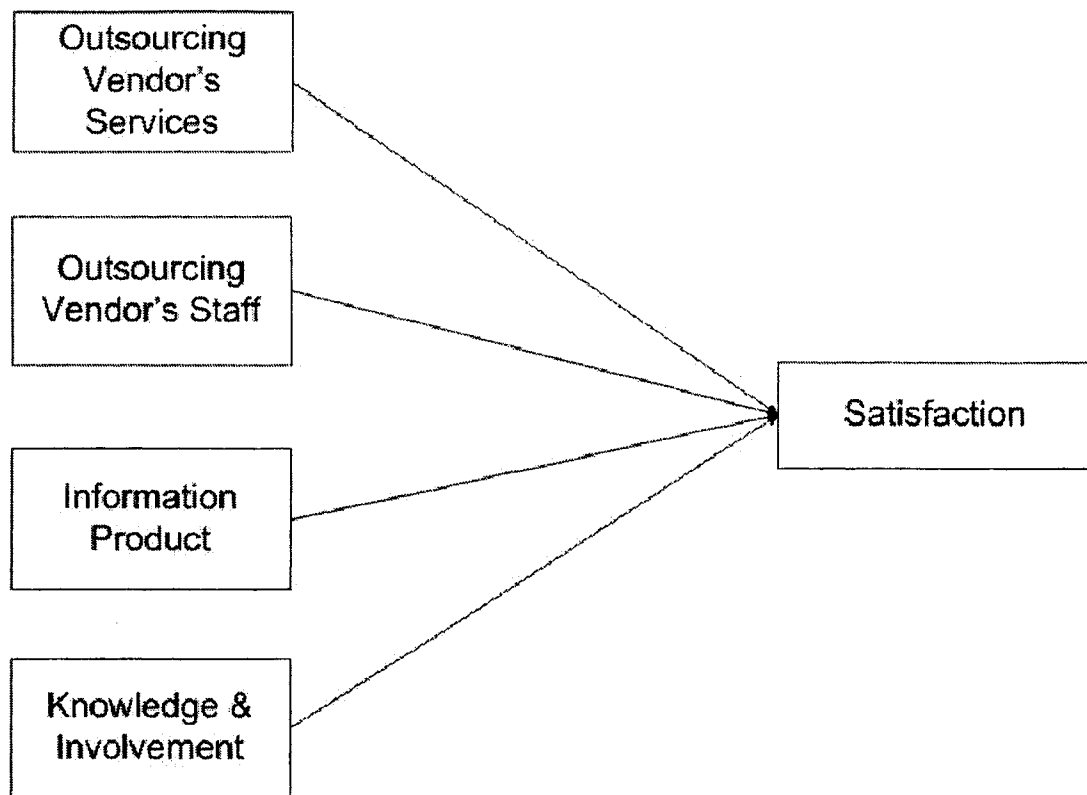


Figure 5. Determinants of Satisfaction

Relationship Quality Introduction

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” (Goles & Chin, 2002, pg. 227). As the previous definition implies, outsourcing arrangements, though differing in a number of ways (Lacity and Willcocks 1998; Lacity, M. et al., 2000a), are all exchange relationships (Grover, Cheon, and Teng 1996b). While outsourcing transactions have always been exchanges between two entities, recently the customer-vendor relationship in an IT context has received attention. Thus, marketing research on exchange relationships is relevant. Information systems

research has identified major dimensions of quality outsourcing relationships as well as a link between quality relationships and successful outsourcing arrangements (Grover, Cheon, and Teng 1996a; Kern 1997a; Lee and Kim 1999; Parasuraman, Berry, and Zeithaml 1991a).

Relationship Dimensions

The previous theoretical perspectives on relationships in client-vendor exchanges resulted in instruments developed to measure exchange relationship quality. Table 12 provides a summary of such measurement in marketing and IS research. The two most common variables used to contribute to the overall relationship measure are trust and commitment (Cronin and Taylor 1992; Dwyer and Welsh 1985; Storbacka, Strandvik, and Gronroos 1994). Other significant dimensions identified in prior research include communication quality, cultural similarity, and degree of interdependence. A brief discussion of these five factors follows.

Trust

Trust is the expectation that another party can be relied upon, their behavior will be predictable, and fairness will be exhibited in their actions (Zaheer, McEvily, & Perrone, 1998). It can also be described as the expectations regarding another's choice of actions that have a bearing on one's own actions (Dasgupta and Stiglitz 1988). Trust forms an important dimension of the exchange relationship and it increases as its usage increases (Gefen, 2002a). Trust is an important component of business relationships because it

Table 12. Relationship Factors in Prior Research

(shaded cells are IS articles)

Item	Kern 1997	Lee & Kim 1999	Grover <i>et al.</i> 1996	Goles 2002	Willcocks <i>et al.</i> 1998	Anderson <i>et al.</i> 1990	Mohr <i>et al.</i> 1994	Dwyer <i>et al.</i> 1987	Morgan <i>et al.</i> 1994	De Wulf <i>et al.</i> 1994
Age of relationship		X								
Attraction ¹								X		
Benefit and risk share		X								
Business understanding ²		X								
Commitment	X	X		X	X		X	X	X	X
Communication quality	X	X	X	X	X	X	X	X		
Conflict	X	X		X		X	X			
Consensus				X						
Cooperation	X		X	X		X				
Coordination		X		X			X			

Cultural similarity	X	X		X	X					
Expectations	X							X		
Flexibility				X	X					
Information sharing		X								
Integration				X						
Interdependence	X	X		X	X	X	X	X		
Joint action		X								
Norm development								X		
Participation		X								
Relationship satisfaction ³	X		X							X
Top mgmt support		X								
Trust	X	X	X	X	X	X	X		X	X

1. Attraction is the result of a buyer/seller interaction in which the reward from the business interaction is greater than the cost.
2. The level of mutual understanding relating to behaviors, goals, and policies of exchange partners.
3. Satisfaction is the overall level of contentment with the relationship

allows organizations to form favorable expectations regarding the other party (Gefen, 2002b). Expectations that are fulfilled consequently build more trust, allowing higher expectations. This relationship between trust and expectations is an integral part of partnership development (Klepper, 1995).

Likewise, trust has been shown to be an important aspect in the development and success of interorganizational relationships (Mohr and Spekman 1994; Morgan and Hunt 1994; Zaheer, A. et al., 1998). Specifically related to outsourcing, trust has been demonstrated to be an antecedent of a successful outsourcing relationship (Grover, Cheon, and Teng 1996a). Similarly, Lee and Kim (1999) concluded that trust does have an effect on outsourcing success, while Sabherwal (1999) determined that trust was an attribute of successful outsourcing IS development efforts.

Commitment

Relationship commitment is the belief that an exchange partner in an ongoing relationship “is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely” (Morgan and Hunt, 1994, pg. 23). One of the key features of commitment is that it is long-term in nature (Anderson and Weitz 1992; Mohr and Spekman 1994). Commitment between firms displays a willingness on the part of committed parties to allocate time and resources to a perpetual relationship. Lee and Kim (1999, pg. 36) define commitment as the “degree of the pledge of relationship continuity between partners” and include it as one of the components of partnership quality. Commitment is evidenced by the amount of time and resources invested in a relationship (Hallen, Johanson, & Seyed-

Mohamed, 1991; Willcocks & Kern, 1998). Investments made that are transaction or relation specific include knowledge acquisition, hardware, and software. These specific investments show a high level of commitment due to the decreased value they hold outside of the current relationship.

Communication Quality

Anderson and Narus (1990, pg. 44) define communication as the “formal as well as informal sharing of meaningful and timely information between firms.” Communication must be regarded as bi-directional, meaning both exchange partners must be participating (Heide & John, 1992). As communication increases in quality and frequency, the exchange partners become more informed and more confident in the relationship, (Anderson and Weitz 1989) keeping dissatisfaction minimized (Kern 1997b). Poor communication can lead to “conflicts, dissatisfaction, and an eventual breakdown of the whole outsourcing venture” (Kern 1997a, pg. 53). In outsourcing arrangements, Lee and Kim (1999) found a positive significant relationship between communication quality and partnership quality. Other research (Grover, Cheon, and Teng 1996a) supports effective communication as a determinant of outsourcing success.

Cultural Similarity

Organizational culture is the “ pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them norms for behavior in the organization” (Deshpande and Webster, 1989, pg. 4). Morgan and Hunt (1994 , pg. 25) describe shared values as “the extent to which partners have beliefs in common about

what behaviors, goals, and policies are important or unimportant, appropriate or inappropriate, and right or wrong.”

Exchange partners with similar cultures should maintain a higher level of trust (Anderson and Weitz 1989; Lasher, Ives, and Jarvenpaa 1991) which, as described earlier, has been considered a factor influencing successful outsourcing relationships (Grover, Cheon, and Teng 1996a). Cultural incompatibility can cause difficulties in interorganizational relationships (Kumar K. and van Dissel 1996; Rai, Borah, and Ramaprasad 1996) and specifically within outsourcing relationships as well (Willcocks, L. et al., 1998). By minimizing cultural differences, firms can achieve greater progress in the achievement of mutual goals (Kern 1997a). Morgan and Hunt (1994) found support for cultural similarity as an important factor in exchange relationship success.

While most research on cultural compatibility supports it as an important factor in relationship success, Lee and Kim (1999) find no relationship existing between cultural similarity and partnership quality after exchange partners “experience their partner’s organizational culture during the initial relationship period” (pg. 52). One explanation could be that the cultures of organizations evolve to tolerate one another’s culture as the relationship progresses (Goles, 2002). Two limitations of the Lee and Kim research are the “convenient” sample that was used and the exclusive use of 36 Korean organizations in the sample. These limitations reduce the generalizability of the results.

Interdependence

Interdependence is the “degree to which a party’s behaviors, acts, and goals are dependent on the behaviors, acts, and goals of another party” (Pfeffer & Salancik, 1978,

pg. 88). Interdependence suggests that two firms possess complimentary resources that are used strategically by the firms. Mohr and Spekman (1994), using a sample of personal computer manufacturers and dealers, did not find a relationship between interdependence and partnership quality. Later research (Monczka, Peterson, Handfield, & Ragatz, 1998) sampling procurement specialists in 77 companies worldwide regarding a supplier alliance found the opposite, that interdependence is significantly related to success. Differences between the outcomes of the studies could be related to the samples, one of which was the personal computer industry while the other sample was manufacturing. In addition, Mohr and Spekman indicate the nonsignificance of interdependence on relationship quality may be attributable to the measure of interdependence. They surmise that a broader measurement of interdependence may provide a more accurate representation of interdependence. Monczka *et al.*, did use a broader measure.

An assessment of the items used to measure interdependence by Mohr and Spekman (1994) and by Monczka *et al.*, shows a difference in the concept of interdependence between the two research studies. Mohr and Spekman approach interdependence as a component of switching costs and thus do not imply an interdependence. Monczka *et al.*, measure interdependence with items more closely related to the Pfeffer & Salancik (1978) definition above. The items used in the Mohr and Spekman and Monczka *et al.*, research are shown in Table 13.

In the outsourcing literature, Lee and Kim (1999) hypothesized a positive correlation between interdependence and relationship quality but the results indicated a negative relationship. As an outsourcing firm becomes increasingly dependent on an outsourcing

vendor, the outsourcing firm senses a loss of control and an increase in switching costs. In other words, an unbalanced interdependence adversely affects the relationship. Additionally, the results from Lee and Kim indicate a significant relationship between interdependence and business understanding between outsourcing partners (negative), mutual benefit and risk share between outsourcing partners (negative), and conflict as defined as “the degree of incompatibility of activities, resource share, and goals between partners” (pg. 36) (positive), but all results were contrary to the hypothesized outcomes. Interdependence was also found to not be related to trust and commitment.

The counterintuitive results may be explained in part by the shift in influence or power that occurs as the exchange relationship progresses (Fitzgerald & Willcocks, 1994). Initially, the balance of power resides with the service receiver (Lee and Kim 1999) but as the exchange relationship progresses, service providers assume more responsibility and risk (Grover, Cheon, and Teng 1996a). As service receivers begin to feel dependent on the service provider and realize the switching costs that are present, the service receivers may begin to regard interdependence as negative, thus supporting the counterintuitive results reported by Lee and Kim. Again, the Lee and Kim research is based on a Korean sample of firms and may not be generalizable.

When mutual dependence is balanced between organizations, the relationship is positively affected. As the interdependence becomes more unbalanced, the interdependence has a negative effect on the exchange relationship (Anderson and Narus 1990). Thus, one of the goals of an exchange relationship should be to balance the dependence between firms.

Table 13. Measures of Interdependence

<p><i>Monczka et al.</i></p> <ol style="list-style-type: none"> 1.) It would be very easy to terminate these most or least successful strategic supplier alliance/partnerships and establish another strategic supplier. 2.) The time to establish another strategic supplier alliance/partnership for this commodity/purchase family would be extremely long. 3.) The cost to establish another strategic supplier alliance/partnership for this commodity/purchase family would be extremely high.
<p>Mohr and Spekman</p> <ol style="list-style-type: none"> 1.) If we wanted to, we could switch to another manufacturer's product quite easily. 2.) If the manufacturer wanted to, they could easily switch to another reseller.

Summary and Implications for Further Research

Various factors or dimensions have been used (see Table 12) to study relationship quality within marketing and IS research (Cronin and Taylor 1992; Dwyer and Welsh 1985; Storbacka, Strandvik, and Gronroos 1994). 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. Figure 6 illustrates the positive relationships between these five dimensions and relationship quality. 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 (1999) found communication quality positively associated with relationship quality ($\beta=0.236$ and $p < .10$), while also finding interdependence negatively associated with relationship quality ($\beta=-0.241$ and $p < .05$). Although no quantitative data exist which associates cultural compatibility with relationship quality, case research provided by Willcocks and Kern (1998) 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. Figure 6 represents the relationship quality between a client and a vendor.

Consequences of Relationship Quality

Outsourcing success has been shown to not depend exclusively on a certain service quality level being achieved, rather success depends on other factors including the relationship between the parties (Kern 1997a). Relationship quality has been shown to influence IT outsourcing success (Grover, Cheon, and Teng 1996a; Kern 1997a; Lee and Kim 1999), but “the nature of the linkage is not readily apparent” (Goles, T. et al., 2002, pg. 224). Several theories have been used to investigate exchange relationships including social exchange theory (Emerson, 1962), transaction cost theory (Dwyer and Oh 1988; Gaski 1984; Heide, 1994), relational exchange theory (Dwyer, Schurr, and Oh 1987), and resource-dependency theory (Heide, J., 1994). Each of these involve relational influences on exchange success. Relational exchange theory in particular discusses the synergy that

results from relationships. Consequently, firms value the relationship and devote resources toward maintaining a positive, enduring relationship.

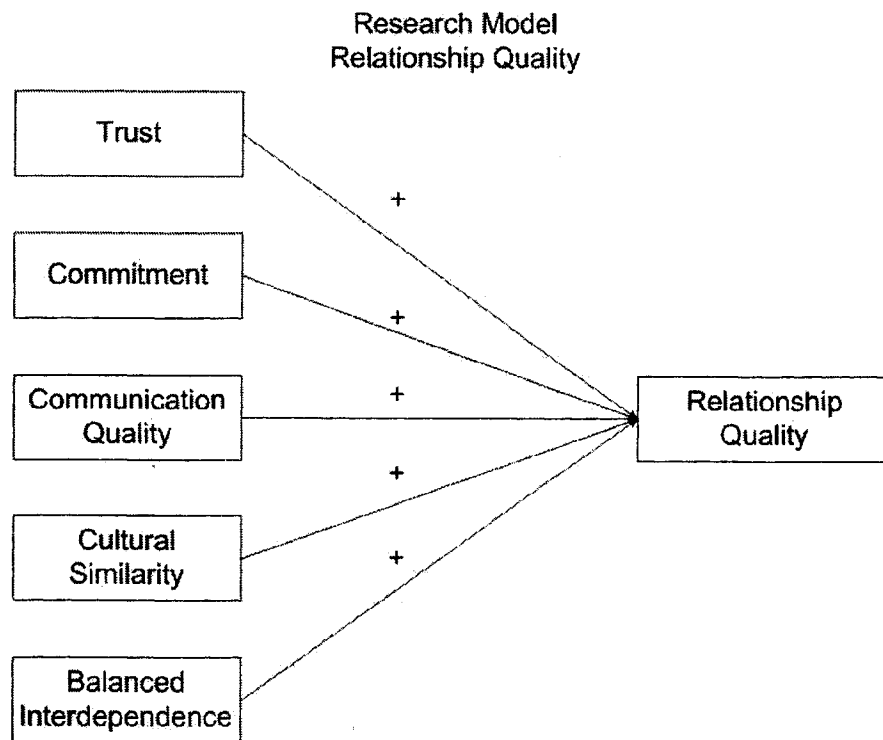


Figure 6. Relationship Quality Research Model

Switching Costs Introduction

Switching costs are the costs associated with outsourcing discontinuations and are defined as the “perceived economic and psychological costs” associated with changing from one alternative to another (Jones, Mothersbaugh, and Beatty 2002). Fifty-one percent of contracts end with a vendor switch and thirty-four percent of contracts result in back-sourcing either at the end of a contract period or as a result of a cancellation of an

outsourcing contract (Lacity & Willcocks, 2002a). Early in 1997, the Gartner Group estimated that roughly 70 percent of all IT outsourcing customers would restructure their deals before 2000. As much as twenty percent of those restructures would terminate their contracts prematurely and either backsource or switch vendors (McGee, 1997). In a survey of high-growth companies, with revenues less than \$50 million, 83 percent responded that they had outsourced to some degree. Of those that had outsourced, 24 percent planned to terminate their agreements (Caldwell and McGee 1997).

Switching Costs

No matter the type of outsourcing discontinuation, a certain level of expense will exist. One factor that may deter switching from one vendor is the cost involved in terminating a relationship and establishing a new one. These costs are defined as switching costs. Porter (1980) describes switching costs as one-time costs required in terminating the current relationship and securing an alternative. Jackson (1985) includes psychological, physical, and economic costs as components of switching costs that are incurred in the process of changing service providers. Weiss and Anderson (1992, pg. 104) define switching costs as “expenditures (more generally, disutility or difficulty) related to changing over, as opposed to the costs of operating a new system once it is established.” Research has shown that overall switching costs negatively impact an organization’s intention to switch (Weiss and Anderson 1992).

Factors Affecting Switching Behavior

Buyer Uncertainty

Heide and Weiss (Heide and Weiss 1995) expand the idea of switching costs to include three factors organizational buyers consider when making a vendor change decision in

high-technology markets. The first factor is buyer uncertainty. Uncertainty can exist in regards (1) to the setup costs associated with bringing IT activities back in-house, (2) inexperience with the outsourced products and services and (3) market conditions related to price and availability when buyers evaluate IT equipment to be placed back in-house.

The information gaps that exist at the time of purchase due to high levels of technological change contribute to this uncertainty (von Hippel 1986). These gaps are the result of needing to learn about technologies to be purchased and brought in-house in order to have the IT capabilities required. These gaps will be especially wide in organizations where little IT capabilities have been retained following an outsourcing arrangement or those who have never had the capability in-house.

Vendor choice in rapidly changing, high-tech markets such as IT outsourcing can be challenging (Tushman and Anderson 1986). Time sensitivity of information in a rapidly changing environment increases the difficulty level for decision makers as they are challenged to maintain knowledge currency (Bourgeois and Eisenhardt 1988; Glazer and Weiss 1993). Maintaining currency can assist in distinguishing between vendor capabilities and potential, ultimately leading to a better match between outsourcing customer and vendor.

Sunk Costs

Heide and Weiss (1995) discuss sunk costs as those costs arising as a result of earlier commitments to certain technologies and particular vendors (Jackson, 1985). Prior commitments to particular technologies may increase the costs incurred in backsourcing because prior purchases may be incompatible with newer products that may be used

when backsourcing. Costs associated with commitments to earlier technologies are less pertinent in this research related to application development outsourcing contracts because the outsourcing of application development is not a hardware intensive activity, although testing of applications is necessary to ensure compatibility.

Sunk costs associated with earlier commitments to vendors is pertinent to the current research because organizations have already established certain routines and procedures for dealing with specific vendors (Heide and John 1990; Moriarty and Kosnik 1989). These routines and procedures will have to be established with a new vendor if an organization decides to switch vendors. Routines and procedures include the day-to-day business functions. Examples include processes for proposing scope changes, application specification modifications, and reporting of problems. Similarly, new working relationships will need to be developed when vendors are changed (Heide and Weiss 1995). Investments in procedures provide a greater barrier to change than other investments (Jackson, B. B., 1985).

Situational Factors

The third factor considered by Heide and Weiss (1995) is situational factors. Situational factors include purchase importance and the centralization and formalization of the buying process. Purchase importance is the “impact of a purchase on organizational profitability and productivity” (McQuiston, 1989, pg. 70). A particular purchase can be important to the buying firm due to competitive advantages that may be gained as a result (Porter, 1980a; Robertson & Gatignon, 1986). Heide and Weiss (1995) conclude that while high purchase importance may lead to a broader vendor search initially, purchase importance did not significantly affect switching decisions.

Formalization relates to the rules and procedures that exist. Two types of divergent formalization systems exist, mechanistic and organic (McCabe, 1987). Mechanistic systems are considered highly formalized, relying on vertical control and strict compliance with a set of rules and procedures. Organically formal systems are the structural opposite of mechanistic systems, where jobs and tasks are refined periodically to fit the current environment. Research has found that high degrees of formalization limit a buyer's decision at the initial vendor selection and switching stages (Heide and Weiss 1995). Centralization, or the degree to which decision-making is constrained to a relatively small set of decision-makers at high organizational levels, is theorized to increase the likelihood of a new vendor being considered in the vendor selection and switching stages (Heide and Weiss 1995). However, support has not been found for this theory.

Components of Switching Costs

Weiss and Anderson (1992), in their research on converting from an independent to an employee sales force, include the following variables as contributors to switching costs:

- difficulty of hiring and training salespeople
- difficulty of upgrading management system
- magnitude of sales rep's reaction
- reaction of the sales rep network

A more recent analysis of switching costs revealed six switching cost dimensions (Jones, Mothersbaugh, and Beatty 2002) as:

- lost performance costs
- uncertainty costs
- pre-switching search and evaluation costs
- post-switching behavioral and cognitive costs
- setup costs
- sunk costs

A meta-analysis of the Weiss, *et al.* (1992) and Jones, *et al.* (2002) research was performed. Two of the Weiss and Anderson (1992) variables were modified to fit the IT outsourcing research. 'Magnitude of sales rep's reaction' was changed to 'magnitude of an outsourcing vendor's employee reaction.' 'Reaction of the sales rep network' was changed to 'reaction of other vendors.' The result of the meta-analysis and modifications to the variables resulted in a two-dimensional categorization of switching costs.

Table 14 summarizes the components of switching costs used in this literature review. The items listed are a direct result of a review of the current literature. In some cases, items may be a combination of factors described in multiple previous research studies.

The first dimension, intangible costs, magnitude of outsourcing vendor's employee reaction, reaction of other vendors, uncertainty, behavioral and cognitive costs, and lost performance costs. The second dimension, tangible costs, includes difficulty in hiring and retraining, difficulty in upgrading the management system, lost performance costs, search costs, and sunk costs. Jackson (1985) in her investigation of switching costs, also uses tangible and intangible dimensions. A brief discussion of each dimension follows.

Intangible Costs

Magnitude of an Outsourcing Vendor Employee's Reaction

Outsourcing personnel reactions may provide an obstacle to exiting a relationship (Weiss and Anderson 1992). The magnitude of an outsourcing vendor's employee reaction could include negative remarks regarding the company. An even more dangerous possibility could occur if an employee switched employment to a competing firm. This switch could result in the transfer of specific business knowledge to that competitor if contractual restrictions are not placed on employees that prevent them from becoming employed by a competitor for a given amount of time after employment termination.

Table 14. Dimensions of Switching Costs

Switching cost	Hypothesized to affect:	Reference
Intangibles		
Uncertainty	Backsourcing Switching	(Guiltinan 1989; Jones, Mothersbaugh, and Beatty 2002)
Behavioral and Cognitive Costs	Backsourcing Switching	(Jones, Mothersbaugh, and Beatty 2002)
Lost performance costs	Backsourcing Switching	(Beatty, Mayer, Coleman, Reynolds, and Lee 1996; Gwinner, Gremler, & Bitner, 1998; Maute and Forrester 1993; Reynolds & Beatty, 1999)
Reaction of Other Vendors	Backsourcing Switching	(Anderson and Weitz 1992)
Magnitude of an Outsourcing Vendor Employee's Reaction	Backsourcing Switching	(Anderson and Weitz 1992)
Tangibles		
Setup Costs	Backsourcing Switching	(Jackson, B. B., 1985; Jones, Mothersbaugh, and Beatty 2002)
Difficulty in hiring and retraining	Backsourcing	(Murray 2000; Murray 1999; Violino and Caldwell 1998; Weiss and Anderson 1992)
Difficulty in upgrading mgmt system	Backsourcing	(Jackson, B. B., 1985; Weiss and Anderson 1992)
Lost performance costs	Backsourcing Switching	(Beatty, Mayer, Coleman, Reynolds, and Lee 1996; Gwinner, K. et al., 1998; Maute and Forrester 1993; Reynolds, K. et al., 1999)
Search Costs	Backsourcing Switching	(Jones, Mothersbaugh, and Beatty 2002)
Sunk Costs	Backsourcing Switching	(Guiltinan 1989; Jones, Mothersbaugh, and Beatty 2002)

Reaction of Other Vendors

Another dimension of personnel reaction is the reaction of other vendors, and employees working for that vendor, with which a company also outsources. The relationship with these vendors and employees could be damaged. Thus, a decline of that relationship could result (Anderson and Weitz 1989).

Uncertainty Costs

Uncertainty exists as a result of the unknown performance of a potentially new service provider (Guiltinan 1989). Concerns pertinent to a sourcing decision related to application development include compatibility with existing systems, capacity of vendor in terms of workload, and quality. Given the wide range of quality that could be supplied in application development, uncertainty costs may be high. Uncertainty could impact both vendor switches and back-sourcing, since organizations may not know the level of performance that could be attained in-house or by a new service provider.

Post-switching Behavioral and Cognitive Costs

IT transaction activities may last for as many as two years, during which time IT users and the outsourcing vendor staff may debate over responsibility issues related to the contract. These differences of opinion can be the result of contract interpretation differences (Lacity, M. et al., 2000a). As a result, considerable time and effort can be invested in switching to a new vendor. These post-switching behavioral and cognitive costs include the organization's perception of the time and effort to adapt to the new procedures and routines of the service provider. These costs are especially important in service markets due to the key role that the organization plays in procedures and routines (Jones, Mothersbaugh, and Beatty 2002).

Lost Performance Costs

Continued patronage of a particular service provider can afford certain benefits that can only accrue over time (Maute and Forrester 1993; Reynolds, K. et al., 1999). Researchers have identified psychological and economic benefits that resulted from continued relations with a service provider (Gwinner, K. et al., 1998). Psychological benefits include comfort and trust in the provider, while economic benefits (which will be considered a tangible cost below) include discounts, quicker service, and time saved in searching for another vendor. These benefits provide an incentive to remain in a relationship (Beatty, Mayer, Coleman, Reynolds, and Lee 1996).

Tangible Costs

Setup Costs

Jackson (Jackson, B. B., 1985) suggests that setting up a new IT system would include human resource and asset additions, both of which would contribute to the setup costs associated with a back sourcing arrangement. Since many companies having outsourcing arrangements have either lost or seriously reduced the human resource capabilities needed to carry out IT sourcing activities and processes, one of the first areas in which back sourcing companies may focus is hiring of additional new IT employees. In years past, hiring has been one of the more difficult tasks associated with this process due to the short supply of capable IT personnel (Davis 1998).

Difficulty in Hiring and Retraining IT Personnel

One problem that can exist in the workplace is caused by the shortage of skilled IT employees (Violino and Caldwell 1998). Smaller companies sometimes cannot afford these specialists that have a great IT knowledge depth. And even if they can employ these

workers temporarily, employers cannot permanently employ the best specialists as they often get better job offers (Greer, Youngblood, and Gray 1999).

Currently, the cost of hiring IT employees can be high relative to employees in other departments. Existing employees may need salary increases to keep them satisfied if new employees are hired at higher salaries. Another cost that may increase the overall IT personnel costs are those costs associated with the use of an outside consultant to assist in the hiring process. Lastly, the hiring cycle may need to be considerably reduced in order to secure good talent because that potential employee may have several offers pending and may not wait patiently for all companies to make offers (Murray 2000; Murray 1999). If the decision is made to backsource, hiring and training has to take place. The hiring of employees from the outsourcing vendor could ease these costs due to their experience gained from working with the system at the outsourcing vendor, especially given a system that is highly idiosyncratic.

Difficulty in Upgrading Management System

In the sales management literature, Anderson (1985) and Jackson (1985) conclude that a more extensive management system is necessary after converting from an independent sales force to an employee sales force, most notably caused by the number of employees that would be managed (Weiss and Anderson 1992). A vendor switch should maintain the same level of management required since the functions would remain the same, but with a different vendor.

Pre-switching Search and Evaluation Costs

Pre-switching search and evaluation costs include the time and effort involved with searching for viable alternatives and evaluating them (Lacity & Willcocks, 2000b). The

IT sourcing search process is initiated with a formal RFP (request for proposal) created to get both internal and external bids (Lacity, M. et al., 2000a). Characteristics of services that may affect search and evaluation costs include the geographic dispersion and limited alternatives in an area, the intangible nature of services, and the inability to separate production and consumption (Jones, Mothersbaugh, and Beatty 2002).

Sunk Costs

Sunk costs are those measuring the nonrecoverable time, money, and effort invested in the previous service provider relationship. The other tangible and intangible costs mentioned previously become sunk costs as they are incurred (Jones, Mothersbaugh, and Beatty 2002). Some costs may not be economically important because they have already been incurred, but they may be psychologically important (Guiltinan 1989). Similarly, there may exist a form of emotional sunk costs which refer to the psychological attachment to a project that can exist (Keil 1995).

According to economic theory, considering such historic and nonrecoverable sunk costs is irrational. Only future costs and benefits should be included in decisions (Gaumnitz and Emery 1980; Howe and McCabe 1983; Soman & Gourville, 2001). Regardless, managers often find it difficult to ignore sunk costs, making the decision to switch even more difficult (Jackson, B. B., 1985; Keil, Bernard, Wei, Saarinen, Tuunainen, & Wassenaar, 2000).

Prospect theory has been used to explain the effect sunk costs have on decision-making (Whyte 1986). In situations where sunk costs have already been incurred and there is uncertain project success on the horizon (even after additional expenses), prospect theory

proposes that decision makers will be more likely to continue spending additional money on the project because they have yet to accept the loss of investment in a project. Even in cases where project success is not certain, decision-makers are likely to continue devoting resources to the project. This is often termed “throwing good money after bad” (Garland 1990; Keil 1995)

The Effects of High Switching Costs

Even in cases where satisfaction with a relationship may be low, the client may stay in the relationship (Porter, 1980b) due to high switching costs, i.e., high psychological and economic costs (Porter, M., 1980a; Willcocks and Lacity 1995) or high relationship termination costs (Morgan and Hunt 1994). A dependence on a provider may then result from the high switching costs (Heide and John 1988; Jackson, B. B., 1985; Lacity & Hirschheim, 1993; Richmond and Seidman 1993; Richmond, Seidman, and Whinston 1992). Dwyer, Schurr, and Oh (Dwyer, Schurr, and Oh 1987) furthered this theory in the marketing literature by proposing that a buyer’s anticipation of high switching costs leads to an interest by the buyer to maintain a high quality relationship.

In the case of a Winner’s Curse, where the outsourcing vendor miscalculates the costs of supplying the outsourcing services, service may degrade. The service degradation could result from fewer services being offered, lower numbers of staff dedicated to the outsourcing services, or less qualified staff assigned to the services. The client may then make the decision to continue the “cursed” agreement due to the presence of high switching costs (Kern, Willcocks, and van Heck 2002).

Some research (Jackson, B. B., 1985) supports the idea that a combination of high switching costs and the lack of an attractive alternative may keep a relationship together, even in the face of a less than desirable relationship. Other research suggests that the option of switching to another vendor (or back-sourcing) can be even more complicated due to the lack of an attractive alternative (Jones and Sasser 1995b). If a company is not confident regarding its ability to effectively perform IT functions in-house, switching costs could be even higher than normal.

As a result of high switching costs keeping organizations together in an outsourcing relationship, a false loyalty can be developed in customers (Jones and Sasser 1995a). These companies will remain loyal, but only due to the restriction placed by the high switching costs. Research has shown that in markets where switching costs were not present, customers reacted by switching vendors (Heide and Weiss 1995; Jones and Sasser 1995a).

Switching Costs Summary

The presence of switching costs in the IS literature has been fairly limited. A review of the marketing literature has provide a comprehensive set of switching costs that are relevant in the IS realm as well. Both tangible and intangible costs are posited to contribute to overall switching costs (Figure 7). Switching costs are posited to be negatively related to firms' intentions to terminate outsourcing contracts. Although no evidence is provided in the literature that specifically relates switching costs with application development outsourcing contract decisions, it would seem that switching

costs would be a factor based on research with other services such as banking and barber services (Jones, Motherbaugh, & Beatty, 2000).

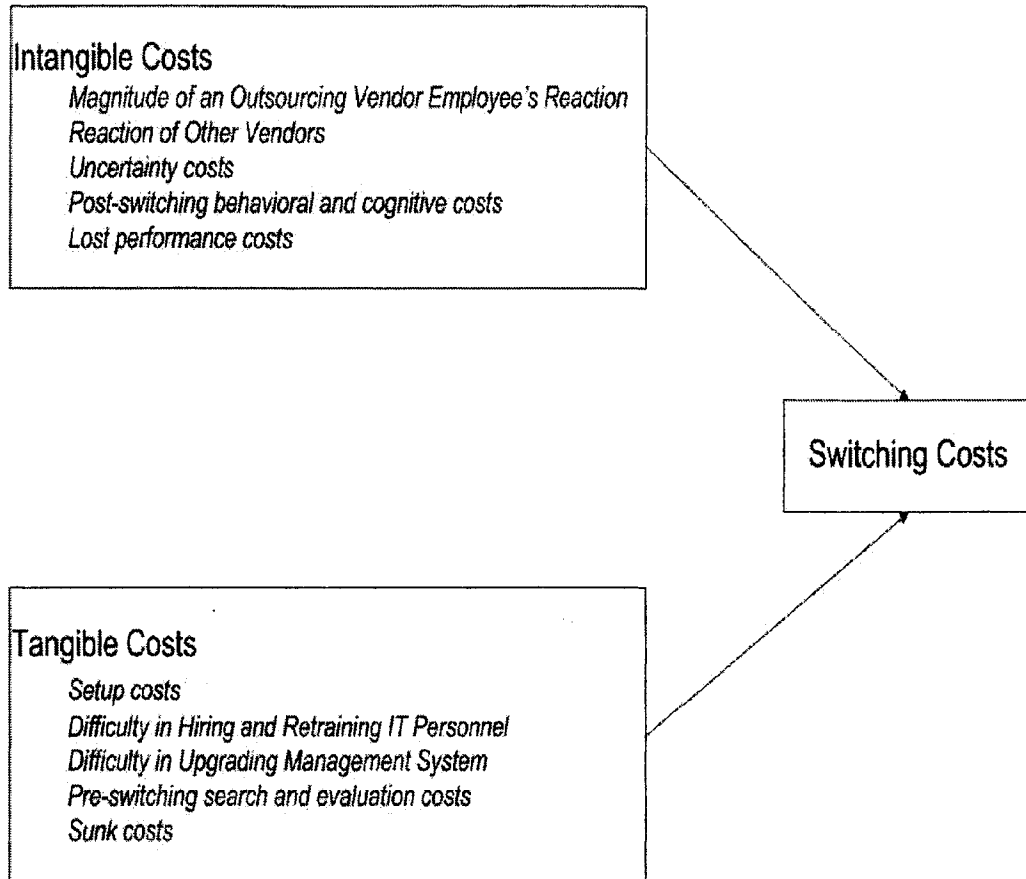


Figure 7. Determinants of Switching Costs

Literature Review Summary

It has been shown in the review of the literature supporting this research that

- 1.) service quality in an outsourcing arrangement positively relates to outsourcing success,
- 2.) satisfaction with a relationship has been positively linked to repurchase intent and the continuation of a relationship,

- 3.) relationship quality directly affects the decision to remain in an outsourcing relationship, and
- 4.) firms are more likely to remain in a relationship as switching costs increase due to many factors.

Understanding the relationships between service quality, satisfaction, relationship quality, and switching costs as they relate to relationship duration is critical in order to identify specific actions that can ultimately be used to increase customer retention and long term profitability (Bolton, R., 1998). Hypotheses are developed in the next chapter based on the literature review.

Theoretical Perspective

Two theories are available which can be useful in describing the relationship between the constructs and the discontinuation of outsourcing contracts. The first is agency theory. It describes exchange relationships as involving two parties, a principal and an agent (Donaldson, 1990). The principal delegates some authority to the agent, who performs certain tasks for the principal. Principals fear that the dependency on the agent and their own lack of expertise will lead to agents exhibiting opportunistic behavior. The agent believes that as the relationship evolves, the services expected from the principal will increase or the conditions will change without an increase in reward for the agent.

Agency theory assumes that the interests of the principal and agent are inclined to diverge. The result of this divergence is agency loss, or the gap between the expectations of the principal and the actual performance of the agent, or the value lost when the cost of

reinforcing the contract exceeds the benefits of the contract (Fama and Jensen 1983). The agency problem becomes an issue after two conditions are met (Logan 2000). The first issue is that the agent and principal have different goals. Secondly, it must become difficult or expensive for the principal to measure what the agent is actually doing.

In applying agency theory to outsourcing, two questions were raised by Logan (2000). By simultaneously answering these questions, a positive atmosphere can be established for an outsourcing relationship.

- 1.) What can the principal do to encourage quality service and fair treatment?
- 2.) What can the agent do to keep the user satisfied and at the same time reach its own outcome goal?

The second theory is transaction cost theory (TCT). It is similar to agency theory in that one exchange party does not provide full value to the other party (Williamson, 1985). A focus of TCT is on the transaction costs that arise in managing the ongoing transactions. Transaction costs can include the costs of source selection, contract management, performance measurement, and dispute resolution. The result of the evaluation of transactions costs is to choose the governance structure that fits the characteristics of the transaction. Transaction characteristics include asset specificity, potential for opportunism, bounded rationality, and production costs. Governance changes may result in the form of vertical integration or joint ventures (Williamson, O., 1985).

One key area of conflict in transactions is investment in specialized investments. Outsourcing service providers must be cautious when investing in assets that are specific to a particular customer. This decreases economies as well as leads to increased dependence on the relationship.

TCT presumes that market-based exchanges are typically preferred over intra-firm functions because of flexibility, efficiency, and cost factors (Dwyer and Oh 1988). Two main costs comprise transaction costs: direct costs and opportunity costs (Rindfleisch and Heide 1997). Direct costs include search and information costs, bargaining and decision costs, and policing and enforcement costs (Coase 1937). Direct costs also include the potential costs associated with the transaction including those necessary to adapt to new activities and processes and evaluate the activities and relationship. A second set of costs, opportunity costs, are also involved in the process. These costs are the result of failing to make the most efficient decision (Heide, J., 1994). When relatively few exchange partners constitute a market, frictions can occur which lead to exchange failures due to opportunism by the vendor organizations. Failures can result from factors such as dramatic price increases and decreased quality.

Both theories propose that economic actors have the propensity to shirk responsibility or act opportunistically, resulting in one party obtaining less than desired results from the application development outsourcing transaction. In these cases vertical integration, which is essentially analogous to back-sourcing, can result. Switching vendors is also

likely to happen if application development outsourcing customers can locate a satisfactory replacement vendor.

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this chapter is to introduce the research model, present the research hypotheses, present the measurement scales, and discuss the strategy for testing the hypotheses articulated. Associated theoretical justification will also be included. Lastly, the research design will be discussed.

Research Hypotheses

In general, the research model proposes that application development outsourcing contract discontinuations (defined as switching vendors or back-sourcing) are negatively associated with service quality, satisfaction, relationship quality, and switching costs. Table 15 provides a description of each of the four constructs, along with a list and description of each construct dimension. The hypothesized relationships are shown in Figure 8. A discussion of each of the associations along with the accompanying hypothesis follows.

Table 15. Research Constructs and Dimensions

Construct	Definition	Source	Did they use same items
Satisfaction	The level of satisfaction a user has with his or her information system	(Baroudi and Orlikowski 1988)	
Outsourcing vendor staff and services	Respondents' self-reported assessment of the attitude and responsiveness of the EDP staff as well as the quality of their relationship with the EDP staff	(Baroudi and Orlikowski 1988)	Yes
Contractor services	The level of service provided by the outsourcing vendor	(Sengupta and Zviran 1997)	Yes
Information output	Respondents' self-reported assessment of the quality of output delivered by the information system	(Baroudi and Orlikowski 1988)	Yes
Knowledge and involvement	Respondents' self-reported assessment of the quality of training provided, their understanding of the systems, and their participation in its development.	(Baroudi and Orlikowski 1988)	Yes
Relationship quality	The extent to which relationship outcomes match the expectations of the participants	(Lee and Kim 1999)	
Trust	Degree of confidence and willingness between partners	(Lee and Kim 1999, pg. 36)	Yes
Commitment	Degree of the pledge of relationship continuity between partners	(Lee and Kim 1999, pg. 36)	Yes
Communication quality	Degree to which effective communication between parties exist	(Lee and Kim 1999)	Yes
Cultural compatibility	The similarity of shared values and beliefs that help individuals understand organizational functioning and provide norms for behavior in the organizations	(Lee and Kim 1999, pg. 38)	Yes
Interdependence	The degree to which participants perceive mutual benefits from interactions	(Lee and Kim 1999, pg. 38)	Yes

Switching Costs	Costs associated with outsourcing discontinuation and are defined as the “perceived economic and psychological costs” associated with changing from one alternative to another	(Jones, Mothersbaugh, and Beatty 2002, pg. 441)	
Reaction of other vendors	The potential adverse reaction of a vendor after the termination of a relationship with another vendor	(Weiss and Anderson 1992)	Yes
Difficulty in Upgrading Management System	Perceptions of costs associated with creating a more extensive management system	(Weiss and Anderson 1992)	Yes
Difficulty in Hiring and Retraining IT Personnel	Costs associated with hiring and training personnel as a result of changes in new assets and procedures after backsourcing	(Weiss and Anderson 1992)	Yes
Magnitude of an Outsourcing Vendor Employee’s Reaction	The negative reaction resulting from disparaging remarks made regarding the company or specific business knowledge being shared as a former outsourcing employee is employed with a competitor	(Weiss and Anderson 1992)	Yes
Uncertainty	Perceptions of the likelihood of lower performance when switching	(Jones, Mothersbaugh, and Beatty 2002, pg. 442)	Yes
Post-switching behavioral and cognitive costs	Perceptions of the time and effort of learning a new service routine subsequent to switching	(Jones, Mothersbaugh, and Beatty 2002, pg. 442)	Yes
Lost Performance Costs	Perceptions of the benefits and privileges lost by switching	(Jones, Mothersbaugh, and Beatty 2002, pg. 442)	Yes

Setup Costs	Perceptions of the time, effort, and expense of relaying needs and information to provider subsequent to switching	(Jones, Mothersbaugh, and Beatty 2002, pg. 442)	Yes
Pre-switching Search and Evaluation Costs	Perceptions of the time and effort of gathering and evaluating information prior to switching	(Jones, Mothersbaugh, and Beatty 2002, pg. 442)	Yes
Sunk Costs	Perceptions of investments and costs already incurred in establishing and maintaining a relationship	(Jones, Mothersbaugh, and Beatty 2002, pg. 442)	Yes
Service Quality	Service quality can be defined as the conformance to customer requirements in the delivery of a service. It is a perceived judgment that results from comparing customer expectations against the level of service customers perceive to have received.	(Parasuraman, Zeithaml, and Berry 1988).	
Tangibles	Physical facilities, equipment, and appearance of personnel	(Parasuraman, Zeithaml, and Berry 1988).	Yes
Reliability	Ability to perform the promised service dependably and accurately	(Parasuraman, Zeithaml, and Berry 1988).	Yes
Responsiveness	Willingness to help customers and provide prompt service	(Parasuraman, Zeithaml, and Berry 1988).	Yes
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence	(Parasuraman, Zeithaml, and Berry 1988).	Yes
Empathy	Caring, individualized attention the firm provides its customers	(Parasuraman, Zeithaml, and Berry 1988).	Yes

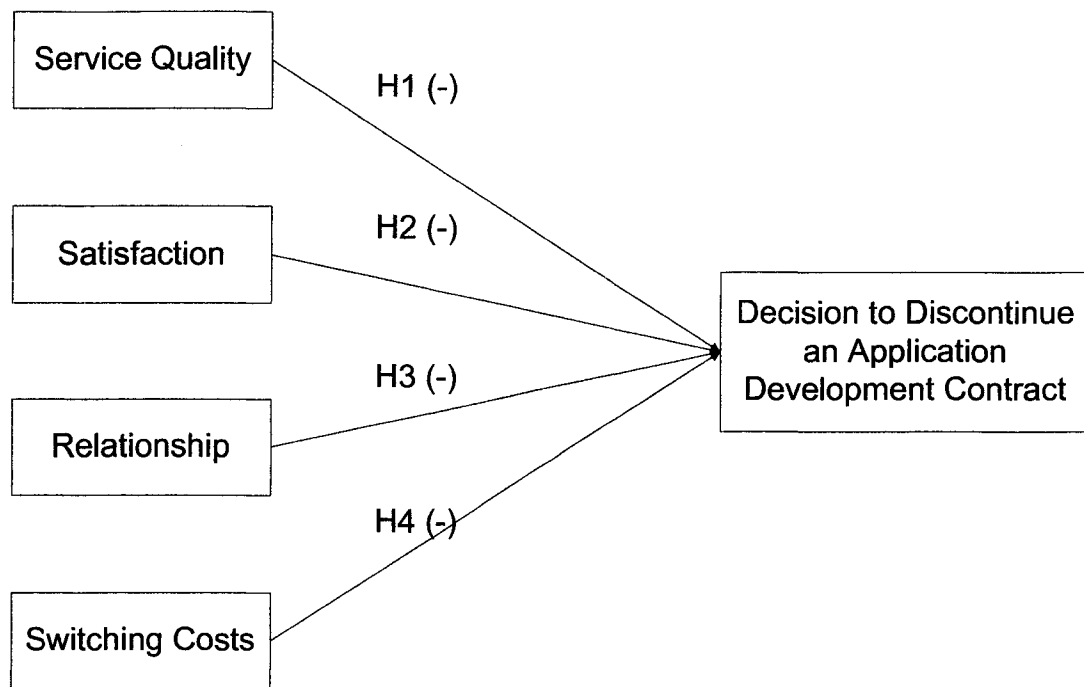


Figure 8. Proposed Research Model

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 (Zeithaml, Berry, & Parasuraman, 1988). Firms assign considerable significance to service quality as evidenced by some firms' use of service quality to strategically position themselves in the market (Brown & Swartz, 1989; Parasuraman, Zeithaml, and Berry 1988). Although the analysis of the correlation between service quality and post hoc decisions is limited, service quality has been shown to affect purchase intentions (Cronin and Taylor 1992). The results of research concluded by Zeithaml, *et al.*, (1996) 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 (1996) concluded that service quality significantly and negatively interacted with application development outsourcing in its relationship with outsourcing success. The measurement of service quality provides a limitation of the Grover *et al.*, study, as only two of the five constructs typically used with the SERVQUAL instrument were included in the instrument. McFarlan and Nolan (1995) suggest that service quality in an outsourcing relationship is positively associated with outsourcing success.

Based on a review of the extant literature, it seems that as service quality decreases, a firm is more likely to terminate an outsourcing contract. Agency theory and transaction cost theory (TCE) both provide support for this proposition as well. Agency theory predicts that as the relationship extends, the agent has the propensity to shirk responsibility and act opportunistically, which can ultimately lead to lower levels of service provided. TCE predicts that the principal will act in such a way as to minimize the costs associated with the relationship. Part of those costs to be minimized include management costs required to policing and enforcing the service quality levels. Agency theory and TCE both suggest that firms will select the governance method that will minimize costs. Thus, as service quality decreases due to shirking and opportunistic behavior, agents will be more likely to switch vendors or backsource. Hence, the following hypotheses are offered.

H_{1a}: Service quality is negatively associated with the decision to backsource an application development outsourcing contract.

H_{1b}: Service quality is negatively associated with the decision to switch vendors in an application development outsourcing contract.

Satisfaction

Research has shown that satisfaction with a service provider has been linked to intent to repurchase or continue a relationship (Anderson and Sullivan 1993; Bolton and Drew 1991; Oliva, Oliver, and MacMillan 1992; Oliver 1981; Oliver 1980; Patterson, Johnson, and Spreng 1997; Ping 1994). Results also indicate that satisfied channel members are less likely to exit a relationship (Hunt and Nevin 1974; Ruekert and Churchill, Jr. 1984). Research confirms that dissatisfaction more heavily impacts repurchase intentions relative to satisfaction (Bolton, 1998).

Similar to service quality, agency theory and TCE can both be used to assist in explaining the relationship between satisfaction and the application development outsourcing decision. Agency theory supposes that principals will shirk responsibility and act opportunistically. As this occurs, transaction costs increase and the agent is inclined to either switch vendors or backsource

Virtually no research directly addresses the use of satisfaction as a correlate with outsourcing success in a post hoc investigation. It is posited that repurchase intentions can be seen as a proxy for the decision to continue with an outsourcing contract. Therefore, it is hypothesized that satisfaction will be negatively related to outsourcing

customers' decisions to switch vendors or backsource applications development and maintenance. Thus, the following hypotheses are offered.

H_{2a}: Satisfaction is negatively associated with the decision to backsource an application development outsourcing contract.

H_{2b}: Satisfaction is negatively associated with the decision to switch vendors in an application development outsourcing contract.

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 (Anderson and Narus 1990; Dwyer, Schurr, and Oh 1987; Kern 1997; Mohr and Spekman 1994; Morgan and Hunt 1994). Each of these factors has been found to be significantly and positively related to relationship quality.

An examination of the marketing and IS research has indicated a link between relationship quality and relationship success (Anderson and Narus 1990; Dwyer, Schurr, and Oh 1987; Kern 1997; Mohr and Spekman 1994; Morgan and Hunt 1994).

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 (Kern, 1997b). Quality relationships between firms and outsourcing vendors have positively influenced the success of the outsourcing agreement (Grover, Cheon, and Teng 1996; Kern 1997; Lee and Kim 1999). 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.

Consistent with the discussion of service quality and satisfaction, agency theory and TCE can also 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. Hence, the following hypotheses are offered.

H_{3a}: Relationship quality is negatively associated with the decision to backsource an application development outsourcing contract.

H_{3b}: Relationship quality is negatively associated with the decision to switch vendors in an application development outsourcing contract.

Switching Costs

Switching costs, or those costs associated with either moving service to another vendor or bringing the outsourcing activities back in-house, may deter terminating an outsourcing relationship. Research has shown that customers are even willing to stay in relationships in which they are dissatisfied due to the presence of high switching costs (Morgan and Hunt 1994; Porter, 1980; Willcocks and Lacity 1995). Dependency upon a service provider, caused by the lack of experience within a company or many other factors, can

lead to relatively high switching costs. Companies can then be “locked into” an outsourcing relationship due to the inability to terminate the relationship without incurring large switching costs.

As further support of the significance of switching costs, it has been shown that in environments where switching costs were not present, customers reacted by switching vendors (Heide and Weiss 1995; Jones and Sasser 1995). Hence, it follows that switching costs are negatively associated with the decision to switch vendors or backsource application development and maintenance. The following hypotheses are thus provided.

An additional hypothesis (H_4) is offered for switching costs because it is posited that a significant difference exists between the effects of switching costs on back sourcing and switching vendors. The difference exists because back sourcing, relative to switching vendors, entails more costs due to the hiring of additional staff, infrastructure costs, and equipment. Thus, firms are posited to react differently to contract termination in regards to switching and back sourcing.

H_4 : Switching costs are negatively associated with the decision to discontinue an application development outsourcing contract.

H_{4a} : Switching costs are negatively associated with the decision to backsource an application development outsourcing contract.

H_{4b} : Switching costs are negatively associated with the decision to switch vendors in an application development outsourcing contract.

Scale Development

Many of the survey items were collected from existing research as described in Chapter 2 of this paper. Additional items were included related to demographics. After all items were included, 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.

The survey instrument, when complete, totaled 7 pages and 169 items. The instrument is divided into a total of 6 sections (Appendix B).

The first section consists of general questions that relate to the contract, vendor skills, the application(s) being outsourced, and the impact of outsourcing on the firm. Items were drawn from a literature review in these areas and discussions with three executives with IT outsourcing experience. A total of 35 items are included in this section.

Relationship Quality

The second 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 information systems research (see Table 12). A meta-analysis was thus performed in both the marketing and information system 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 IT 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 16 provides reliability measures for the scale. Table 17 contains the items comprising the relationship quality scale utilized in the current research.

Table 16. Reliability Scores for Relationship Quality Measures

Factor	Lee and Kim
Trust	0.840
Commitment	0.862
Communication quality	0.904
Cultural similarity	0.635
Degree of interdependence	0.927

Table 17. Relationship Quality Scale

Item
1. In our relationship, the outsourcing vendor made decisions beneficial to us.
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.
6. In our relationship, the outsourcing vendor performed prespecified agreements very well.
7. In our relationship, my firm faithfully provided support prespecified in the contract.
8. In our relationship, both the outsourcing vendor and the company always tried to keep promises.
12. Both the outsourcing vendor and the company communicated well with each other.
13. In our relationship, both the outsourcing vendor and the company had different corporate cultures from one another.
14. In our relationship, both the outsourcing vendor and the company had a hard time understanding one another's business rules and forms.
15. In our relationship, both the outsourcing vendor and the company were similar in regards to the processes of problem solving, decision making, and communication.
18. Both the outsourcing vendor and the company effectively supported activities that required mutual participation.
19. In our relationship, the outsourcing vendor supported and managed most of the core information technologies the company needed.
22. The manner and methods of communication quality between both the outsourcing vendor and the company were timely.
22. The manner and methods of communication quality between both the outsourcing vendor and the company were accurate.
22. The manner and methods of communication quality between both the outsourcing vendor and the company were complete.
22. The manner and methods of communication quality between both the outsourcing vendor and the company were credible.

Satisfaction

The third 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 (1983) and Ives, Olson, and Baroudi (1983). 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 (1983) 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 (Baroudi and Orlikowski 1988).

The UIS scale has previously been used and validated in an IT outsourcing environment by Sengupta and Zviran (1997). 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 knowledge and involvement factors respectively (Sengupta and Zviran 1997). The instrument was slightly reworded to fit within an application development outsourcing context. A seven-point Likert-type scale was utilized. Table 18 presents the UIS scale.

Table 18. UIS Scale (Backsourcing Version)

1. Relationship with the outsourcing vendor.	Dissonant	1	2	3	4	5	Harmonious
	Bad	1	2	3	4	5	Good
2. Attitude of the outsourcing vendor's staff.	Belligerent	1	2	3	4	5	Cooperative
	Negative	1	2	3	4	5	Positive
3. Communication with the outsourcing vendor's staff.	Dissonant	1	2	3	4	5	Harmonious
	Destructive	1	2	3	4	5	Productive
4. Processing of requests for changes to existing systems.	Slow	1	2	3	4	5	Fast
	Untimely	1	2	3	4	5	Timely
5. Time required for new systems development.	Unreasonable	1	2	3	4	5	Reasonable
	Unacceptable	1	2	3	4	5	Acceptable
6. Reliability of output information.	Low	1	2	3	4	5	High
	Inferior	1	2	3	4	5	Superior
7. Relevancy of output information.	Useless	1	2	3	4	5	Useful
	Irrelevant	1	2	3	4	5	Relevant
8. Accuracy of output information.	Inaccurate	1	2	3	4	5	Accurate
	Low	1	2	3	4	5	High
9. Precision of output information.	Low	1	2	3	4	5	High
	Uncertain	1	2	3	4	5	Definite
10. Completeness of the output information.	Insufficient	1	2	3	4	5	Sufficient
	Inadequate	1	2	3	4	5	Adequate
11. Degree of IS training provided to users.	Incomplete	1	2	3	4	5	Complete
	Low	1	2	3	4	5	High
12. Users' understanding of systems.	Insufficient	1	2	3	4	5	Sufficient
	Incomplete	1	2	3	4	5	Complete
13. Users' feelings of participation.	Negative	1	2	3	4	5	Positive
	Insufficient	1	2	3	4	5	Sufficient

Switching Costs

The fourth section of the instrument included items related to switching costs, which are the perceived economic and psychological costs associated with changing from one alternative to another (Jones, Mothersbaugh, and Beatty 2002). An analysis of the marketing and information systems literature revealed a variety of switching cost dimensions. Ultimately, switching costs were labeled as either tangible or intangible

costs. These categorizations were further divided into more dimensions. Table 14 illustrates the dimensions of switching costs as well as the supporting references.

The scale developed for the current research was assembled with items from multiple sources due to the exploratory investigation of switching costs in an application development outsourcing environment. Items for reaction of other vendors, difficulty in upgrading management system, difficulty in hiring and retraining IT personnel, and magnitude of an outsourcing vendor employee's reaction were taken from Weiss and Anderson (1992). The items used to measure uncertainty, post-switching behavioral and cognitive costs, lost performance costs, setup, pre-switching search and evaluation costs, and sunk costs were derived from Jones, Mothersbaugh, and Beatty (2002). Scale reliability scores are reported in Table 19. The full scale used in the current research is shown in Table 20.

Table 19. Relationship Quality Reliability Scores

Relationship Factor	Reliability Score
Reaction of other vendors	0.60
Difficulty in Upgrading Management System	0.79
Difficulty in Hiring and Retraining IT Personnel	0.82
Magnitude of an Outsourcing Vendor Employee's Reaction	0.67
Uncertainty	0.79
Post-switching behavioral and cognitive costs	0.86
Lost Performance Costs	0.95
Setup Costs	0.83
Pre-switching search and evaluation costs	0.95
Sunk Costs	0.88

Table 20. Switching Costs Scale With Factors and Source

Item	Factor	Source
1. The morale of all of our other outsourcing vendors dropped after this outsourcing contract was terminated.	Reaction of other vendors	W&A
2. After discontinuing this outsourcing contract, our other outsourcing vendors gained confidence in us.	Reaction of other vendors	W&A
3. Discontinuing this outsourcing contract provoked a negative reaction with our other outsourcing vendors.	Reaction of other vendors	W&A
4. We were able to backsource without a significant investment in resources to create a new management system.	Difficulty in Upgrading Management System	W&A
5. Discontinuing the outsourcing contract forced us to invest a good deal in setting up a new management system.	Difficulty in Upgrading Management System	W&A
6. Backsourcing required radical changes in the way we managed.	Difficulty in Upgrading Management System	W&A
7. After discontinuing the contract, we found it very difficult to locate and hire good IT employees.	Difficulty in Hiring and Retraining IT Personnel	W&A
8. After discontinuing the contract, the cost of locating, hiring, and training new IT employees was extraordinarily high.	Difficulty in Hiring and Retraining IT Personnel	W&A
9. After discontinuing the contract, we could not attract the people we considered acceptable to support our applications development and maintenance.	Difficulty in Hiring and Retraining IT Personnel	W&A
10. After discontinuing the contract, it took a long time for the internal development team to become productive.	Difficulty in Hiring and Retraining IT Personnel	W&A
11. After discontinuing the contract, we hired experienced people and had them producing results within a reasonable amount of time.	Difficulty in Hiring and Retraining IT Personnel	W&A
12. After discontinuing the contract, the total length of time from start to finish to establish a new application development team and for them to become productive was extremely long.	Difficulty in Hiring and Retraining IT Personnel	W&A
13. The previous outsourcing firm made it very difficult for us to discontinue the contract.	Magnitude of an Outsourcing Vendor Employee's Reaction	W&A
14. After discontinuing the contract, the outsourcing vendor's reaction was the least of our problems.	Magnitude of an Outsourcing Vendor Employee's Reaction	W&A
15. After discontinuing the contract, the outsourcing vendor was unhappy, but that was the end of it.	Magnitude of an Outsourcing Vendor Employee's Reaction	W&A

16. After discontinuing the contract, we were not sure what the level of service would be.	Uncertainty	JMB
17. After discontinuing the contract, the service we received was worse than the service previously received.	Uncertainty	JMB
18. Before discontinuing the contract, we felt the service from in-house developers could be worse than the service we were receiving at that time.	Uncertainty	JMB
19. Before discontinuing the contract, we felt that backsourcing would require learning how to do things differently.	Post-switching behavioral and cognitive costs	JMB
20. I was unfamiliar with the policies of our in-house development group.	Post-switching behavioral and cognitive costs	JMB
21. After discontinuing the contract, we had to learn how the "system works" with the in-house development group.	Post-switching behavioral and cognitive costs	JMB
22. Discontinuing the outsourcing relationship meant we had to learn about the policies of our in-house development group.	Post-switching behavioral and cognitive costs	JMB
23. The previous outsourcing vendor provided us with particular privileges we would not receive elsewhere.	Lost Performance Costs	JMB
24. By continuing to use the previous outsourcing vendor, certain benefits would have been received that would not have been received if the relationship were terminated.	Lost Performance Costs	JMB
25. After discontinuing the contract, certain benefits were not retained.	Lost Performance Costs	JMB
26. We lost preferential treatment after we discontinued the outsourcing relationship.	Lost Performance Costs	JMB
27. After backsourcing, significant time was required to explain our application needs to the in-house development group.	Setup Costs	JMB
28. After discontinuing the outsourcing contract, we had to explain our processes and systems to the in-house development group.	Setup Costs	JMB
29. There was not much time and effort involved in beginning to use the in-house development group.	Setup Costs	JMB
30. After we discontinued the contract, it took a significant amount of time and effort to locate new IT employees.	Pre-switching search and evaluation costs	JMB
31. After discontinuing the contract, we had to devote significant resources to finding new IT employees.	Pre-switching search and evaluation costs	JMB
32. After we discontinued the contract, we had to conduct an extensive search to find new IT employees.	Pre-switching search and evaluation costs	JMB

33. Locating new IT employees took a great deal of time.	Pre-switching search and evaluation costs	JMB
34. After discontinuing the contract, we had to conduct a search for new IT employees.	Pre-switching search and evaluation costs	JMB
35. Significant time, energy, and effort went into building and maintaining the relationship with our previous outsourcing vendor.	Sunk Costs	JMB
36. Overall, we had a significant investment in the relationship with the previous outsourcing vendor.	Sunk Costs	JMB
37. All things considered, we have devoted significant resources into previous dealings with the previous outsourcing vendor.	Sunk Costs	JMB
38. We have spent significant time and money with the previous outsourcing vendor.	Sunk Costs	JMB
39. We have not invested significant time and money in the relationship with the previous outsourcing vendor.	Sunk Costs	JMB
Source Codes: W&A=(Weiss and Anderson 1992) JMB=(Jones, Mothersbaugh, and Beatty 2002)		

Service Quality

The fifth section is a refined version of the SERVQUAL instrument. Service quality is defined as the conformance to customer requirements in the delivery of a service (Parasuraman, Zeithaml, and Berry, 1988). The measurement of service quality in the IS literature is based on the works of Parasuraman, Zeithaml, and Berry (1988). They developed the SERVQUAL instrument which is an oft-used scale to measure service quality in information systems, as well as other disciplines.

Table 21. Service Quality Scale (Backsourcing Version)

Based upon your experiences, please indicate your level of agreement with each statement below. (1=Strongly Disagree, 7-Strongly Agree)
1. The outsourcing vendor had up-to-date hardware and software.
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.
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.
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.
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.
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.

A major issue to consider when measuring service quality is deciding whether to use a perceptions-only rating or a perceptions-minus-expectations rating. "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” (Zeithaml, Berry, & Parasuraman, 1996). The purpose of this research is to examine the variance in outsourcing outcomes, therefore the perceptions-only measure is used. Table 21 shows the service quality scale. Respondents were asked to rate each statement using a seven-point Likert-type.

CHAPTER 4

RESULTS

Introduction

Results are presented in the following order:

- The data collection process and sample description.
- Response rate and non-response evaluations.
- Demographic characteristics of the sample.
- A discussion of t-tests used to perform an item-level analysis.
- Results of factor analysis.
- Results of the analyses; necessary to evaluate the relationships among the constructs.
- The results from logistic regression.
- The study hypotheses with study results summarized to show support or a lack of support for each hypothesis.
- The results summary and broad purposes of the study.

Data were collected from a sample of executives with titles indicating responsibility for application development (Table 22). All scales used in the logistic regression analyses were determined to be both valid and reliable. Results of the logistic regression analyses indicate a strong relationship between switching costs and the decision to discontinue an application development outsourcing contract. Results also indicate partial support for the relationship between satisfaction and the decision to discontinue an application

development outsourcing contract, as evidenced by the association between timeliness and user understanding with the decision to continue. The relationship between relationship quality and the decision to discontinue is partially supported by the positive association between communication and the decision to continue. Service quality was also found to have a partial relationship with the decision to discontinue, as evidenced by the positive relationship between reliability and the decision to continue.

Table 22. Respondent Job Titles

Title	Count
Application Administrator	1
Application Development Manager	24
AS400 Administrator	1
Assistant Director	1
Assistant Director of Applications Development	1
Assistant IT Manager	1
Assistant VP of IS/IT	7
Associate Director of IS	2
Chief Executive Officer	1
Chief Information Officer	3
Chief Technology Officer	2
Client-server Manager	1
Data Processing Manager	2
Database Administrator	1
Dataprocessing Specialist	2
Director	7
Director of Application Systems	1
Director of Applications	1
Director of Business Information Systems	1
Director of Business Software Development	1
Director of Computer Information Systems	1
Director of Consumer Systems	1
Director of Data Processing	1
Director of Enterprise Systems	1
Director of IS/IT	19
Director of Programming Development	1
Director of Project Management	1
Director of Systems Development	2
Director of Technology and Software Development	1
Director of Technology Development	1

Executive Director	3
Group Manager	1
Administrator of IT Apps	1
Manager	6
Manager of Application Support	1
Manager of Business Systems Development	1
Manager of Development and Store Systems	1
Manager of Enterprise Systems	1
IS/IT Manager	5
Manager of Information Services	6
Manager of Infrastructure Architecture	1
Manager of Management Information Systems	1
Manager of PC Applications Development	1
Manager of Programming	5
Manager of Systems Development	1
Manager of Technology Services	2
Project Manager	5
Project Consultant	1
Programmer/Analyst	5
Senior Director of Information Systems	2
Senior Manager	1
Senior Network Manager	2
Senior System Analyst	1
Senior Vice President of Applications Development	1
Software Testing Engineer	1
Supervisor of Computer Engineering	1
Systems Delivery Manager	1
Systems Development Manager	1
Team Leader – Development	1
Vice President	4
Vice President of Systems Delivery	1
Vice President of Database and Programming Services	1
Vice President of Information Services	1
Vice President of Logistic Systems	1
Vice President of Systems Development	2
Total	160

The Sample

Data were collected from 160 respondents from two mail-outs. The response rate from the first group was 60.34% (105 responses), while the second mail-out provided a response rate of 12.9% (55 responses). The incongruity among the response rates was due

to a modified methodology, which is explained in the Response Rate section.

Respondents, on average, were 46 years old, have been in their current position for 6 years, and have been with the organization for 13 years. One hundred fifteen (72%) were male, while 45 (28%) were female (Table 27). Organizational demographics are detailed in Table 28. The organizations represented by the respondents were 68 years old on average, employed 8,831 employees, and had outsourced for over 11 years. Table 29 details the industries represented by the respondents. The most represented industries were manufacturing, education, health care, and public administration with responses per group of 32, 30, 16, and 14 respectively.

The Sampling Process

The sampling process began with the gathering of contact data for 6,731 executives with a job title indicating a responsibility for application development. The contact information was purchased from the Directory of Top Computer Executives, which has previously been used in other IT research (Byrd and Turner 2001; Grover, Cheon, and Teng 1996; Rajagopalan, Rao, and Chaudhury 1996; Segars & Grover, 1998). A total of 6,000 executives were randomly selected from the list of 6,731 and randomly divided into two groups of 3,000 each.

Phase I of the data collection consisted of sending a cover letter and postage-paid return postcard to 3,000 of the executives. The cover letter (Appendix) described the study and asked for participation. The postcard (Figure 9) consisted of three sections. The first section had three options and respondents were asked to check all options that apply. The first option, if checked, indicated the respondent had experience with back-sourcing. The second and third options respectively, if checked, indicated switching and continuation experience. The second section of the postcard had three check-boxes. The first provided

a response for those indicating they would participate in the study. A survey instrument was then sent to the respondent. Option two indicated the respondent had no experience with outsourcing in this company within the previous three years. Option three indicated the respondent was not willing to participate in the study. The final section of the postcard contained a response area for collecting contact information, later used to send the instrument if appropriate.

<p><i>Please take a minute to answer the two questions below, complete your name and address, and drop this postage-paid card in the mail. Thank you in advance for your help. Your assistance is <u>greatly</u> appreciated!</i></p> <p><i>Please think back to the application development outsourcing contracts you have been involved with in the last three years. Please answer the following two questions related to these contracts:</i></p> <p><i>1. Of the application development contracts you recall, please check all of the boxes below that apply to these contracts. The application development was . . .</i></p> <p style="padding-left: 40px;"> <input type="checkbox"/> <i>switched to another vendor</i> <input type="checkbox"/> <i>brought back in-house (i.e., back-sourced)</i> <input type="checkbox"/> <i>continued with the same vendor</i> <input type="checkbox"/> <i>other (please explain) _____</i> </p> <p><i>2. Would you be willing to answer an anonymous survey regarding contracts like these?</i></p> <p style="padding-left: 40px;"> <input type="checkbox"/> <i>Yes, I would be willing to share my insights, experience, and knowledge.</i> <i>(An Executive Summary of the study results will be sent to all interested participants)</i> <input type="checkbox"/> <i>No, I am not willing to participate in this study.</i> <input type="checkbox"/> <i>No, unfortunately this study does not apply to me.</i> </p> <p>Name: _____</p> <p>Address: _____</p> <p style="text-align: center;"> <i>Street or box number</i> <i>City</i> <i>State</i> <i>Zip</i> </p> <p style="text-align: center;">*** Thank you for your time and consideration. ***</p>			
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Figure 9. Postcard

A follow-up mailing was sent three weeks after the first. A third mailing was sent two weeks after the second mailing. Respondents were offered an Executive Summary upon request. Summaries were requested through email or by sending a business card in an envelope separate from, or included with, the completed and returned instrument.

Postcards that were returned and indicated the respondent was willing to participate were batched and processed weekly. Respondents indicating experience with more than one outsourcing outcome were sent just one instrument. The instrument selected to be sent in these cases was chosen based on an attempt to send the following mix of instruments; 40% continuation, 30% switching, and 30% backsourcing. The 40-30-30 percentages were chosen because those values are basically an average between 50-25-25 and 33-33-33. An even mix of continued and discontinued responses, as well as continued, switched, and backsourced responses, were desired for the analysis. Follow-up letters and instruments were sent to the executives returning the postcard three and five weeks after the initial cover letter and instrument were sent.

Data collection in Phase II differed from the first phase. Each of the 3,000 executives in this separate sample were sent a cover letter, three instruments, a Form D, and a business reply envelope (all of which are shown in the Appendix). The cover letter explained the study and requested participation. The cover letter also explained that three instruments were included and asked that the respondent choose one to complete if they had the relevant experience. Form D was included as a response mechanism for those not participating in the study. Form D contained two sections. The first section had two options. The first option, if checked, indicated the respondent was not willing to participate in the study. The second option was included to indicate a lack of experience in application development outsourcing in the company within the previous three years. The second section contained space for contact information.

Response Rate

Three thousand envelopes were mailed to begin Phase I. A total of 11 were returned as undeliverable. Five hundred fifty three postcards were returned. Respondents indicated an unwillingness to participate on 88 of the postcards, recent inexperience on 291, and willingness to participate on 174. Ultimately, 105 instruments were returned in Phase I. This constitutes a 60.34% (105 / 174) response rate in Phase I. Table 2 contains Phase I postcard response summaries. Table 3 indicates the outcome experience the respondents had with outsourcing.

Table 23. Phase I Postcard Responses

	Count	% of total
Willingness to participate	174	31.46%
Not willing to respond	88	15.91%
Does not apply	291	52.62%
Total Responses	553	

Table 24. Phase I Number of Responses on Postcard by Category

Option(s) checked	Number
Switch	13
Backsource	29
Continuation	60
Switch and backsource	9
Switching and continuation	18
Backsource and continuation	24
Switch, backsource, and continuation	21
Total	174

Phase II response rates were not as robust, partly due to the method of data collection.

Three thousand envelopes were mailed, with 15 being returned as undeliverable. Three hundred ninety two Form Ds were returned and 55 instruments were returned, with two respondents returning two instruments each. A total of 2538 sample members did not

respond. A response rate of 12.9% was obtained in Phase II using the formula (Churchill, 1999) in Figures 10 and 11.

Using the formula in Figure 10, the overall response rate of the study was calculated as 26.6% (Figure 12). The 26.6% was calculated using the 55 and 105 returned instruments from Phases I and II and the 174 instruments mailed out in Phase I. The 372 value in the denominator is calculated as $[(55/55+329)*2601]$ and is the number of nonresponding sample members that are considered eligible. The eligibility is calculated using the eligibility percentage (the percent of respondents completing an instrument) multiplied by the number of sample members not responding.

$$\frac{\text{CQ}}{\text{CQ} + \left(\frac{\text{CQ}}{\text{CQ} + \text{IN}} \right) \text{NC}}$$

where:
CQ = Completed questionnaires
NC = Not completed or refused
IN = Ineligible

Figure 10. Response Rate Formula

$$\frac{55}{55 + \left(\frac{55}{55 + 329} \right) 2601} = 12.9\%$$

Figure 11. Phase II Response Rate

$$\frac{55 + 105}{55 + 174 + 372} = 26.6\%$$

Where:

- 105 = Phase I completed instruments
- 55 = Phase II completed instruments
- 174 = Phase I returned postcards indicating willingness to participate
- 372 = Eligible Phase II sample members

Figure 12. Overall Response Rate

The sample size was adequate to perform the necessary factor analysis and logistic regression, although a larger size was desired. The biggest factor cited by those responding with the postcard in Phase I and Form D in Phase II was inexperience with

application development outsourcing in the organization within the previous three years. Some respondents indicated in handwritten notes that it was company policy to not respond to questionnaires.

Table 25. Phase I and II Responses

	Not willing	Does not apply	Total not participating	Continuation	Switch	Back-source	Total instruments
Phase I	88	291	379	44	28	33	105
Phase II	63	329	392	25	10	20	55
Total	151	620	771	69	38	53	160

Table 26. Number of Instruments Received by Category

	Phase I	Phase II	Total	% of total
Switch	28	10	38	23.75%
Backsource	33	20	53	33.13%
Continue	44	25	69	43.13%
Total	105	55	160	

Description of Respondents, Organizations, and Contracts

The average age of the respondents was 46 years. One hundred fifteen were male (72%), while 45 were female (28%). The average length of time employed by the company was 13 years. Average time in the current position was 6 years. Table 27 summarizes respondent descriptive statistics.

Manufacturing and education were the largest industries represented, with 20% and 19% of organizations responding in these two categories respectively. Health care represented 10% of respondents, while public administration represented 9% of respondents. Other organizational demographic information is shown in Table 28, including age of organization, number of employees in the organization and the IT department, years the firm has practiced outsourcing, number of previous outsourcing contracts, amount spent per year on IT, and percent of budget allocated for application development outsourcing.

Table 27. Respondent Descriptive Statistics

Mean age	46.51	
Mean years in current position	5.83	
Means years with the organization	12.79	
Number of male respondents	115.00	71.88%
Number of female respondents	45.00	28.12%

Table 28. Organizational Demographics

Demographic	Mean	Low	High
Age of organization (in years)	68.11	1.5	200
Number of organizational employees	8,831.69	1	600,000
Number of IT employees in organization	117.72	0	2,000
Number of months firm has outsourced	11.23	.5	120
Previous outsourcing contracts organization has signed within last 5 years	6.76	0	75
Average amount spent on IT organization-wide over the last 5 years	\$17,204,447	\$100,000	\$190,000,000
Current percent of IT budget allocated for application development outsourcing	23.84%	0%	100%

Table 29. Responses by Industry

	Frequency	Percent of responses
Manufacturing	32	20%
Education	30	19%
Health Care	16	10%
Public Administration	14	9%
Wholesale and Retail	11	7%
Finance and Insurance	11	7%
Utilities	5	3%
Professional Scientific and Technical Services	5	3%
Agriculture and Mining	3	2%
Transportation and Warehousing	3	2%
Information Technology	3	2%
Construction	2	1%
Real Estate	2	1%
Entertainment	2	1%
Respondent left blank	1	1%
Management	0	0%
Other	20	13%
Total	160	

On average, the total dollar amount of a contract was \$5,565,115, with a range from \$1,500 to \$89,000,000. Fifty-eight percent of the contracts were for single applications, while 42% were written for multiple applications. The average length of contract for the 151 contracts not indicating indefinite (4 contracts), open (3 contracts), or unlimited (2 contracts) was 26 months. Contract length ranged from 10 days to 15 years. Overall, a large variation was seen in the respondent, organizational, and contractual demographics.

T-tests For Scale Item Differences Among Groups

T-tests were used to determine the statistical difference between group responses (Moore & McCabe, 1999). Responses were first divided into three groups. The first group consisted of those responses from respondents who indicated experience with backsourcing. The other two groups consisted of respondents indicating either switching or continuation with the same vendor. A fourth group was subsequently created by combining the responses from the backsourcing and switching groups. This group is collectively referred to as the discontinuation group.

T-tests were then run to evaluate the response differences between the following pairs:

- 1.) backsourcing-switching
- 2.) backsourcing-continuation
- 3.) switching-continuation
- 4.) continuing-discontinuation

Tables 9-12 display the results, along with the mode, mean, and standard deviation of the responses for each item. Results indicate a statistical difference between some of the responses within each construct scale.

Intuitively, backsourcing and switching responses (pair 1 from above) should be similar since both likely indicate dissatisfaction with the outsourcing arrangement. When these two means differ significantly, these findings are of particular interest. Conversely, it seems logical that response differences between pairs 2-4 (backsourcing-continuation, switching-continuation, and continuing-discontinuation) should be significantly different since those group pairs represent responses from groups with different outsourcing outcomes. Thus, differences at a level of significance greater than 0.05 indicate a relationship that is of particular interest.

Relationship Quality

Results in Table 30 indicate that vendors that make beneficial decisions, provide assistance, are sincere, and perform prespecified agreements well are more likely associated with continued outsourcing decisions as evidenced by the significance associated with the three continue-discontinue tests (backsourcing-continuing, switching-continuing, and continuing-discontinuation, as shown in Table 30). Similar associations are found when both parties behave fairly, try to keep promises, commit to the relationship, commit resources, mutually participate, understand rules and forms, and are similar in regards to processes of problem solving, decision making, and communication. Continue decisions are also related to both parties successfully completing critical tasks

and effectively exchanging information with each other. Good communication is also important, specifically as it is timely, accurate, complete, and credible. With the items representing communication, each of the success versus failure significance levels was less than 0.05, indicating that communication is a critical outsourcing task.

Some relationship items did not statistically differentiate between outsourcing success and failure. The responses for *client providing prespecified support* are not statistically different among the success and failure responses. This support would not seem to be a logical issue to decide the fate of the relationship since it is not dependent upon the outsourcing vendor. It does not appear that different or compatible corporate cultures are significant differentiators due to lack of association with the success versus failure comparisons. What does appear to be important related to culture is that both parties accept each other's culture, which is shown by the highly significant t-tests.

The IT outsourcing literature has not recommended outsourcing a large portion of services, but rather using selective sourcing. Selective sourcing offers the benefits of higher cost savings, better economies of scale, and higher quality work (Willcocks & Lacity, 1998). Results from the current study indicate that there is not a significant difference between the responses related to outsourcing a large portion of systems development and these results may be an anomaly related to application development. Thus, empirical support for the relationship between selective outsourcing and the continuation of an outsourcing contract was not found.

The support and management of most core IT applications by one vendor does not yield significant differences between responses for backsource-continue and switch-continue at the 0.05 level. Significance values of 0.074 and 0.075 were yielded. The continue-discontinue relationship is significantly different once the backsourcing and switching results are combined (significance value of 0.034). These results lend partial support for “the support and management of most core IT applications by one vendor” as being a significant factor in outsourcing.

Table 30. Relationship Quality Scale Items
(Unexpected significances are bolded)

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Trust									
Vendor made beneficial decisions	Mode	5	2	5	6	0.125	0.000	0.000	0.000
	Mean	3.980	3.423	3.747	5.227				
	Std Dev	1.597	1.675	1.644	1.275				
Vendor willing to provide assistance	Mode	5	6	5	6	0.548	0.000	0.000	0.000
	Mean	4.660	4.436	4.566	5.788				
	Std Dev	1.560	1.790	1.653	1.000				
Vendor always sincere	Mode	5	6	5	6	0.343	0.001	0.000	0.000
	Mean	4.303	3.962	4.160	5.288				
	Std Dev	1.581	1.674	1.619	1.274				
Both parties behave fairly	Mode	5	3	5	6	0.143	0.016	0.001	0.000
	Mean	4.649	4.119	4.427	5.333				
	Std Dev	1.546	1.699	1.624	1.396				
Both parties not take advantage of each other	Mode	6	4	5	6	0.091	0.167 *	0.005	0.016
	Mean	4.600	4.030	4.361	5.000				
	Std Dev	1.429	1.589	1.515	1.664				
Commitment									
Vendor performed prespecified agreements well	Mode	5	2	5	6	0.151	0.000	0.000	0.000
	Mean	4.300	3.756	4.072	5.424				
	Std Dev	1.717	1.714	1.727	1.278				
Client provided prespecified support	Mode	6	6	6	6	0.730	0.302 *	0.619 *	0.328 *
	Mean	5.280	5.388	5.325	5.530				
	Std Dev	1.371	1.473	1.407	1.166				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Both parties always try to keep promises	Mode	6	5	6	6	0.768	0.004	0.017	0.001
	Mean	4.780	4.874	4.819	5.576				
	Std Dev	1.502	1.409	1.456	1.348				
Both parties highly committed to the relationship	Mode	5	6	6	6	0.799	0.001	0.002	0.000
	Mean	4.820	4.732	4.783	5.758				
	Std Dev	1.508	1.626	1.550	1.266				
Both parties willing to commit resources	Mode	6	6	6	5	0.692	0.001	0.002	0.000
	Mean	4.700	4.553	4.639	5.621				
	Std Dev	1.632	1.725	1.663	1.147				
Culture									
Both parties had different corporate cultures	Mode	1	2	2	2	0.106	0.744 *	0.139 *	0.487 *
	Mean	2.620	3.269	2.892	2.712				
	Std Dev	1.563	1.967	1.762	1.412				
Both parties had a hard time understanding rules & forms	Mode	4	4	4	6	0.961	0.000	0.003	0.000
	Mean	4.140	4.122	4.133	5.182				
	Std Dev	1.539	1.720	1.607	1.456				
Both parties were similar	Mode	4	2	4	5	0.746	0.007	0.012	0.002
	Mean	3.740	3.642	3.699	4.439				
	Std Dev	1.226	1.489	1.335	1.510				
Both parties had compatible corporate cultures	Mode	5	2	5	4	0.223	0.266 *	0.024	0.051 *
	Mean	3.700	3.294	3.530	4.015				
	Std Dev	1.502	1.519	1.513	1.504				
Both parties accepted each other's culture	Mode	5	5	5	6	0.562	0.000	0.001	0.000
	Mean	4.640	4.464	4.566	5.485				
	Std Dev	1.241	1.476	1.339	1.026				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Interdependence									
Both parties supported mutual participation	Mode	5	6	5	6	0.445	0.001	0.021	0.000
	Mean	4.580	4.806	4.675	5.424				
	Std Dev	1.357	1.341	1.347	1.096				
Vendor supported and managed most core IT	Mode	2	1	2	6	0.866	0.074 *	0.075 *	0.034
	Mean	3.480	3.411	3.451	4.123				
	Std Dev	1.854	1.865	1.848	1.965				
Vendor responsible for large portion of sys development	Mode	6	6	6	6	0.448	0.953 *	0.389 *	0.624 *
	Mean	4.220	4.558	4.361	4.197				
	Std Dev	2.083	1.987	2.038	2.047				
Both parties successfully completed critical tasks	Mode	5	6	6	6	0.748	0.000	0.000	0.000
	Mean	4.285	4.158	4.232	5.470				
	Std Dev	1.906	1.709	1.817	1.243				
Communication									
Both parties effectively exchanged info with each other	Mode	6	6	6	6	0.472	0.000	0.000	0.000
	Mean	4.440	4.195	4.337	5.485				
	Std Dev	1.567	1.540	1.551	1.268				
Both parties communicated well	Mode	6	2	6	6	0.414	0.000	0.000	0.000
	Mean	4.180	3.894	4.060	5.379				
	Std Dev	1.612	1.582	1.597	1.401				
Communication was timely	Mode	5	5	5	6	0.163	0.002	0.000	0.000
	Mean	4.690	4.236	4.5	5.515				
	Std Dev	1.501	1.452	1.489	1.167				
Communication was accurate	Mode	5	3	5	6	0.111	0.000	0.000	0.000
	Mean	4.710	4.208	4.5	5.591				
	Std Dev	1.262	1.523	1.391	1.095				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Communication was complete	Mode	6	3	5	6	0.353	0.000	0.000	0.000
	Mean	4.365	4.047	4.232	5.485				
	Std Dev	1.467	1.613	1.529	1.193				
Communication was credible	Mode	6	5	6	6	0.096	0.001	0.000	0.000
	Mean	4.811	4.242	4.573	5.652				
	Std Dev	1.481	1.585	1.542	1.183				

Satisfaction

Each of the satisfaction items were measured with two semantic difference responses. Eleven of the thirteen items returned significance measures as expected (Table 31). Results indicate that the relationship with the vendor, attitude of the staff, and communication have responses that are statistically different among continue and discontinuation responses. Although the backourcing-continuing, switching-continuing, and continuing-discontinuation responses were significantly different as expected, unexpectedly responses for the quickness of the processing requests were significantly different between backourcing and switching respondents. Backsourcers rated the quickness of the vendor's response significantly lower than those who switched. The next item, new systems development time, provides significance levels as expected, with all dissatisfaction significances different from continuation.

Output significance levels, specifically related to reliability, relevancy, accuracy, precision, and completeness, were all significant differentiators as expected. The users' understanding of the system and their participation in the development process were significantly different with regards to continue and discontinuation. Users whose understanding of the system was more sufficient and complete were less likely to continue the contract. Users whose participation in the development process was more positive and more complete were less likely to discontinue the contract.

Training of the users offers some interesting results:

- The mean for respondents who backsourced was significantly different than for those who continued the contract. The low score for completeness of training was more significant for switching (0.017) than backsourcing (0.138). Thus, incomplete training is significant for switching but not continuing.
- The significance tests for degree of training is significant between those who continued versus the ones who discontinued. The test value for the backsourcing-continuing comparison for the degree of training is not significant. Thus, a high degree of training is not significant for backsourcing.
- Similarly, the test statistic for switching-continuing (0.054) is not significant at the 0.05 level, indicating the mean responses for those who switched and those who continued was similar.

Overall, satisfaction item results are basically as postulated by the literature. All of the continuing-discontinuation t-tests were significant at the 0.05 level. A further investigation into the mean responses reveals that the continuing means are larger in all cases than the discontinuation, backsourcing, and switching means. It can be concluded that satisfaction with the vendor is higher in continuation situations in regards to all aspects of satisfaction.

Table 31. Satisfaction Scale Items
(Unexpected significances are bolded)

Item		Back source N=53	Switch N=38	Discontinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont-Dis
Vendor Service									
Relationship with vendor	Mode	4	4	4	5	0.214	0.000	0.000	0.000
Scale = dissonant...harmonious	Mean	3.370	3.054	3.238	4.200				
	Std Dev	1.100	1.185	1.140	0.863				
Relationship with vendor	Mode	3	4	4	5	0.472	0.000	0.000	0.000
Scale = bad...good	Mean	3.366	3.170	3.284	4.338				
	Std Dev	1.155	1.290	1.210	0.790				
Attitude of staff	Mode	4	5	4	5	0.162	0.001	0.000	0.000
Scale = belligerent...cooperative	Mean	3.936	3.588	3.790	4.492				
	Std Dev	0.935	1.243	1.082	0.659				
Attitude of staff	Mode	4	5	4	5	0.255	0.002	0.001	0.000
Scale = negative...positive	Mean	3.896	3.614	3.778	4.431				
	Std Dev	1.015	1.193	1.095	0.764				
Communication	Mode	4	3	4	4	0.577	0.000	0.000	0.000
Scale = dissonant...harmonious	Mean	3.489	3.354	3.432	4.215				
	Std Dev	1.013	1.162	1.073	0.794				
Communication	Mode	3	3	3	4	0.600	0.000	0.001	0.000
Scale = destructive...productive	Mean	3.570	3.447	3.519	4.200				
	Std Dev	0.926	1.170	1.030	0.808				
Time									
Quickness of processing of requests	Mode	3	4	3	4	0.022 *	0.000	0.018	0.000
Scale = slow...fast	Mean	2.574	3.122	2.803	3.703				
	Std Dev	0.880	1.178	1.045	1.132				
Quickness of processing of requests	Mode	3	4	3	4	0.008 *	0.000	0.006	0.000
Scale = untimely...timely	Mean	2.617	3.242	2.878	3.891				
	Std Dev	0.877	1.158	1.045	1.025				

Item		Back source N=53	Switch N=38	Discontinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont-Dis
New systems development time	Mode	3	3	3	4	0.397	0.000	0.006	0.000
Scale = unreasonable...reasonable	Mean	2.881	3.087	2.967	3.708				
	Std Dev	1.118	1.105	1.111	0.940				
New systems development time	Mode	3	4	3	4	0.331	0.000	0.001	0.000
Scale = unacceptable...acceptable	Mean	2.820	3.054	2.918	3.831				
	Std Dev	1.063	1.120	1.087	0.970				
Information Product									
Reliability of output	Mode	3	2	4	4	0.915	0.000	0.000	0.000
Scale = low...high	Mean	3.000	3.029	3.012	4.015				
	Std Dev	1.161	1.276	1.203	0.953				
Reliability of output	Mode	3	2	3	4	0.945	0.000	0.000	0.000
Scale = inferior...superior	Mean	2.919	2.936	2.926	3.938				
	Std Dev	1.085	1.217	1.135	0.959				
Relevancy of output	Mode	4	4	4	4	0.607	0.000	0.000	0.000
Scale = useless...useful	Mean	3.387	3.259	3.333	4.154				
	Std Dev	1.066	1.171	1.106	0.827				
Relevancy of output	Mode	4	4	4	4	0.810	0.000	0.001	0.000
Scale = irrelevant...relevant	Mean	3.408	3.348	3.383	4.108				
	Std Dev	1.048	1.186	1.102	0.787				
Accuracy of output	Mode	4	2	4	4	0.984	0.000	0.000	0.000
Scale = inaccurate...accurate	Mean	3.224	3.219	3.222	4.200				
	Std Dev	1.130	1.281	1.188	0.788				
Accuracy of output	Mode	4	4	4	4	0.984	0.000	0.000	0.000
Scale = low...high	Mean	3.224	3.219	3.222	4.169				
	Std Dev	1.130	1.303	1.198	0.796				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Precision of output	Mode	3	4	3	4	0.632	0.000	0.000	0.000
Scale = low...high	Mean	3.124	3.247	3.175	4.092				
	Std Dev	1.136	1.195	1.156	0.738				
Precision of output	Mode	3	2	4	4	0.753	0.000	0.000	0.000
Scale =uncertain...definite	Mean	3.103	3.186	3.137	4.092				
	Std Dev	1.165	1.229	1.186	0.696				
Completeness of output	Mode	4	2	4	4	0.669	0.000	0.000	0.000
Scale = insufficient...sufficient	Mean	3.001	3.117	3.049	4.031				
	Std Dev	1.125	1.304	1.197	0.928				
Completeness of output	Mode	3	2	2	4	0.896	0.000	0.000	0.000
Scale = inadequate...adequate	Mean	3.102	3.065	3.086	3.985				
	Std Dev	1.233	1.308	1.257	0.886				
Knowledge and Involvement									
Training	Mode	3	2	3	4	0.340	0.138 *	0.017	0.022
Scale = incomplete...complete	Mean	2.996	2.767	2.900	3.297				
	Std Dev	1.125	1.070	1.102	1.003				
Training	Mode	3	2	3	4	0.603	0.131 *	0.054 *	0.039
Scale = low...high	Mean	2.852	2.728	2.800	3.156				
	Std Dev	1.106	1.076	1.089	1.011				
Users' understanding of system	Mode	4	3	4	4	0.497	0.001	0.014	0.000
Scale = insufficient...sufficient	Mean	3.083	3.239	3.148	3.754				
	Std Dev	1.085	1.015	1.053	0.912				
Users' understanding of system	Mode	3	3	3	4	0.834	0.001	0.003	0.000
Scale = incomplete...complete	Mean	3.041	3.090	3.062	3.723				
	Std Dev	1.124	1.024	1.078	0.937				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Participation of user	Mode	3	3	3	4	0.460	0.001	0.001	0.000
Scale = negative...positive	Mean	2.999	2.825	2.926	3.600				
	Std Dev	0.969	1.133	1.038	0.925				
Participation of user	Mode	3	3	3	4	0.450	0.002	0.001	0.000
Scale = insufficient...sufficient	Mean	3.019	2.856	2.951	3.569				
	Std Dev	0.892	1.046	0.957	0.944				

Service Quality

Service quality was assessed with the SERVQUAL instrument. T-test results are shown in Table 32. As with previous research using SERVQUAL that found tangible items to be insignificant (Jiang, Klein, and Crampton 2000), the four intangible items (up-to-date hardware and software, visually appealing physical facilities, employees well-dressed and neat, and appealing physical facilities) do not seem significant as evidenced by the lack of significance among the continue versus discontinue comparisons. Collectively the intangible items did not distinguish between continuing and discontinuation respondents, thus following some of the previous literature.

The t-test significance values for the item measuring how often promises were kept were not statistically significant for the three different tests evaluating continue versus discontinuation. Hence, there was not a significant difference among the three groups for the item “promises were kept by the vendor and client.”

Interestingly, many of the service quality items reveal significant differences in back-sourcing-switching but not in switching-continuing. A review of the mean responses reveals that switching responses are significantly higher than the back-sourcing responses, while the switching and continuing responses are similar. Low service quality with one vendor seems to be associated with bringing application development back in-house rather than switching to another vendor. High service quality scores are associated with continuation or switching vendors. Items that follow this pattern relate to vendor dependability, the vendor keeping promises, vendor correct in saying when services

would be completed, vendor showing interest, prompt service, willingness to help, employees never too busy to help, vendor behavior instilling confidence, individual attention, personal attention, the vendor understanding the needs of users, and the vendor having the user's best interests at heart.

Four items followed the expected pattern for all t-test significances except the switching-continuing test. These items were error-free records provided, users feeling safe with vendor employees, courteous employees, and convenience of vendor hours. In each of these four items, backsourcing-switching tests were significant at the 0.010 level (0.051, 0.056, 0.082, and 0.084), just missing the 0.05 level used in this study. Again it appears that the respondents were satisfied with outsourcing, but switched for a reason other than

Table 32. Service Quality Scale Items
(Unexpected significances are bolded)

Item		Back source N=53	Switch N=38	Discontinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont-Dis
Tangible									
Up-to-date hardware and software	Mode	6	4	6	6				
	Mean	4.704	5.038	4.844	5.154	0.265	0.079 *	0.679 *	0.161 *
	Std Dev	1.368	1.353	1.364	1.327				
Visually appealing physical facilities	Mode	4	4	4	4				
	Mean	4.253	4.523	4.366	4.672	0.282	0.038	0.522 *	0.082 *
	Std Dev	1.099	1.169	1.130	1.019				
Employees well-dressed and neat	Mode	6	6	6	6				
	Mean	4.971	5.233	5.081	5.438	0.346	0.024	0.444 *	0.058 *
	Std Dev	1.088	1.374	1.215	1.080				
Physical facilities were appealing	Mode	4	4	4	4				
	Mean	4.524	4.753	4.620	4.852	0.311	0.080 *	0.647 *	0.164 *
	Std Dev	0.970	1.063	1.010	1.020				
Reliability									
Promises kept by vendor and client	Mode	5	6	5	6				
	Mean	4.243	5.036	4.575	5.092	0.113	0.076 *	0.854 *	0.120 *
	Std Dev	1.060	1.431	2.529	1.526				
Vendor dependable	Mode	5	6	5	6				
	Mean	4.001	5.224	4.512	5.561	0.000 *	0.000	0.201 *	0.000
	Std Dev	1.723	1.300	1.666	1.178				
Vendor kept promises	Mode	5	6	5	6				
	Mean	4.058	5.053	4.474	5.333	0.001 *	0.000	0.312 *	0.001
	Std Dev	1.563	1.231	1.509	1.502				
Error-free records provided	Mode	3	4	4	5				
	Mean	3.587	4.263	3.870	4.379	0.051	0.003	0.711 *	0.027
	Std Dev	1.468	1.618	1.559	1.250				

Item		Back source N=53	Switch N=38	Discontinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont-Dis
Vendor showed sincere interest	Mode	5	6	5	6	0.019 *	0.000	0.204 *	0.001
	Mean	4.698	5.358	4.975	5.667				
	Std Dev	1.344	1.200	1.319	1.086				
Responsiveness									
Vendor said when services would be performed	Mode	4	4	4	6	0.002 *	0.001	0.963 *	0.020
	Mean	3.902	4.788	4.273	4.800				
	Std Dev	1.413	1.207	1.394	1.350				
Prompt service	Mode	4	6	6	6	0.001 *	0.000	0.159 *	0.000
	Mean	4.003	5.020	4.429	5.379				
	Std Dev	1.421	1.245	1.434	1.160				
Willingness to help	Mode	3	6	5	6	0.000 *	0.000	0.277 *	0.000
	Mean	4.314	5.332	4.740	5.576				
	Std Dev	1.292	1.060	1.296	1.096				
Employees never too busy to help	Mode	3	6	6	6	0.001 *	0.000	0.376 *	0.001
	Mean	3.955	4.754	4.289	5.015				
	Std Dev	1.312	1.472	1.429	1.295				
Assurance									
Knowledgeable vendor employees	Mode	5	6	6	6	0.100	0.000	0.028	0.000
	Mean	4.413	4.989	4.654	5.667				
	Std Dev	1.665	1.526	1.625	1.305				
Vendor behavior instilled confidence	Mode	4	6	4	6	0.004 *	0.000	0.286 *	0.000
	Mean	3.911	4.868	4.312	5.197				
	Std Dev	1.371	1.561	1.521	1.303				
Users felt safe with vendor employees	Mode	4	6	4	6	0.056	0.000	0.064 *	0.000
	Mean	4.162	4.768	4.416	5.318				
	Std Dev	1.306	1.507	1.417	1.205				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Courteous employees	Mode	6	6	6	6	0.082	0.002	0.244 *	0.007
	Mean	5.008	5.467	5.200	5.742				
	Std Dev	1.310	1.100	1.240	1.194				
Empathy									
Individual attention	Mode	4	6	4	6	0.024 *	0.002	0.627 *	0.022
	Mean	4.242	4.906	4.520	5.046				
	Std Dev	1.243	1.371	1.332	1.430				
Vendor hours are convenient	Mode	5	7	5	6	0.084	0.004	0.519 *	0.023
	Mean	4.471	5.052	4.714	5.250				
	Std Dev	1.481	1.542	1.525	1.347				
Personal attention	Mode	4	5	5	6	0.014 *	0.003	0.726 *	0.030
	Mean	4.290	4.998	4.587	5.092				
	Std Dev	1.391	1.205	1.356	1.444				
Vendor had users' best interests at heart	Mode	5	6	5	6	0.004 *	0.002	0.894 *	0.055 *
	Mean	4.306	5.128	4.650	5.091				
	Std Dev	1.247	1.264	1.311	1.454				
Vendor understood needs of users	Mode	3	6	5	6	0.000 *	0.000	0.370 *	0.000
	Mean	3.732	5.060	4.288	5.303				
	Std Dev	1.389	1.383	1.528	1.136				

#: Discontinuation responses are a combination of back-sourcing and switching responses.

poor service quality. Respondents rating service levels negatively tend to backsource rather than switch vendors. The remaining item in the service quality study, knowledgeable vendor employees, provides expected significance levels. The results indicate the mean score for the continuing contracts is significantly higher than for discontinuation.

Switching Costs

T-test results for switching costs are shown in Table 33. Results for the item “morale of other vendors dropped after termination” indicate a statistical insignificance on the continue versus discontinuation evaluations of this item, thus indicating that morale of other vendors is not a substantial issue to respondents. The next item, “other vendors gain confidence after discontinuation,” shows a significant difference between back sourcing and switching responses. Backsourcing respondents show a higher average, 4.292 vs. 3.708 respectively for backsourcing than switching for this item. Therefore, it seems that if firms backsource they feel other vendors are more likely to gain confidence in the firm as opposed to if they switch vendors. It seems likely that respondents think that backsourcing would relate to higher vendor confidence since the vendors don’t see a switch to a competitor, but rather a loss of potential services to an in-house group. The third item which is concerned with the reaction of outsourcing vendors is “after discontinuation, a negative reaction from other vendors is likely.” This item yields statistically different responses among backsourcing and switching respondents, with backsourcing responses being higher. Backsourcing-continuing and continuing-discontinuation test results both indicate a lack of statistical difference between

responses. Thus, respondents indicate a negative reaction from vendors is associated with backsourcing but not from switching.

The next three items are concerned with management costs. The first item is “able to switch or backsource without a big investment in a new management system.” Responses for backsourcing and switching are not significantly different. The backsourcing-continuing responses are significantly different as expected, yet the switching-continuing responses are not significantly different. This result suggests that in instances where firms switch, they are not as concerned with new management costs as opposed to when firms backsource. “Discontinuation forces us to invest in a new management system” yielded t-test significances that were as expected. An investigation of the means across groups showed a much higher average response for the group that did not discontinue, which suggests that firms that continue may have a much higher expectation of costs than what is actually present. Lastly in this section, the statement was made that “after discontinuation, we hired good people and they produced quickly.” Responses across the success versus failure groups showed a lack of significant differences for this item.

The next switching cost group of items referred to hiring costs. The first item was “backsourcing or switching would change the way we manage.” The switching-continuing t-test revealed a lack of significance for these responses, combined with a lack of significance among the backsourcing-switching responses, suggesting that those respondents who switched vendors only somewhat changed the way they managed as a result of the discontinuation of the outsourcing arrangement. The next five items relate to

difficulty in locating and hiring, high search and training costs, not being able to hire acceptable people, taking a long time for the new development team to be productive, and taking a long time to hire a new team and it be productive. These five items all have t-test significances with expected significance levels. An investigation into the mean responses for these items reveals that all continuing responses are significantly higher than the discontinue responses. This result suggests that the actual costs for these categories are not as high as firms believe, or the costs are prohibiting discontinuation.

Results of the tests for the item “previous vendor made it difficult to discontinue the contract” show a lack of significance between the switching and continuing responses. However, means are significantly lower for back sourcing than continuing with the same vendor or switching. Combined with the switching-continuing t-test that shows an insignificant difference in the responses, the back sourcing-switching result suggests that the previous vendor made it somewhat less difficult to discontinue the contract when the client switched. Responses for “not sure what the level of service would be after discontinuation” and “after discontinuation, service would be worse than before” both yielded test significances as expected. The back sourcing-switching comparison was insignificant, while the continue-discontinue comparisons were all significant at the 0.05 level. Higher levels of uncertainty were associated with continuing the contract. This result suggest that in situations where firms continued, they perceived the level of service after discontinuation would be lower than the service rating given by firms that did actually switch or backsource.

The next item, “the vendor’s reaction after discontinuation,” was not significantly different among the groups. The perception by those continuing the contract was not significantly different than by those who discontinued through back sourcing or switching. For the next item, “after discontinuation, the vendor was unhappy but that was the end of it,” the back sourcing-switching comparison yielded statistically insignificant differences, as did the switching-continuing test. The last uncertainty item is “back sourcing/switching requires learning new things.” Results were as expected, with the back sourcing-switching comparison not significantly different but significant differences were found in the continue-discontinue comparison. An investigation of the mean responses shows a higher mean response for continuing. The higher mean score suggests that respondents that continued with the same vendor thought that there was more to learn than did those respondents who actually switched or back sourced.

The first item in the post-switching costs section is “unfamiliarity with in-house/other vendor development.” Respondents who had switched vendors were asked to respond to a question related to “other vendor” development while respondents indicating back sourcing were asked to respond to a question worded as “in-house” development. There is a significant difference between back sourcing and switching responses, with response means of 1.978 and 3.177 respectively and a significant difference between back sourcing and continuing responses with response means of 1.978 and 2.746 respectively. The significantly lower response mean for the back sourcing group suggests that firms that are outsourcing know more about in-house development than development within other vendors.

Results also indicate that the backsourcing-switching responses are not significantly different at the 0.05 level for the item “after discontinuation, the client has to learn how the system works.” There is a lack of significance in all of the continue-discontinue tests. These results indicate that learning how the system works with the same vendor, a new vendor, or in-house is not significantly different. “Discontinuation means learning new policies” has a significant difference in the backsourcing-switching test, with a higher mean response rate for switching (4.033 as compared to 2.791). The switching-continuing significance is 0.669 indicating that switching and continuing responses are not significantly different. It appears that respondents perceive switching and continuing as requiring the learning of more new policies than if they were to bring the application development back in-house. The last post-switching item is “after discontinuation, a new development team would have to have processes explained to them.” The backsourcing-switching test was significant at the 0.05 level, as were the continue-discontinue tests. Mean responses for backsourcing, switching, and continuing are 3.485, 4.812, and 5.531 respectively. The in-house development team is perceived to not need processes explained to them as much as vendors would whether switching or continuing with the same vendor.

The four items that comprise the lost performance costs are concerned with service from a new development team could be worse than the current vendor, the outsourcing vendor provides unique privileges, certain unique benefits are only retained by the outsourcing vendor, and certain benefits are not retained after discontinuation. All means were

significantly different for those continue-discontinue tests. Mean responses for each item were highest for the continuing group, indicating perceived higher lost performance costs. Collectively, the results from these items indicate that the outsourcing vendor provides certain benefits that would not be retained if the client were to either switch or backsource.

The section on setup costs includes three items. Two of the items are “lost preferential treatment after discontinuation” and “much time is involved in beginning to use a new development team.” Neither of the differences among back sourcing-switching groups were significant at the 0.05 level, while the continue-discontinue means were significantly different. The mean responses for each item were highest for the continuing group. This result indicates that back sourcing and switching are both perceived as having setup costs that are significant. The third item, “significant time required to explain things to a new development team,” has a significant difference in responses among the back sourcing and switching groups, with a switching response mean of 4.003 and a back sourcing response mean of 3.172. Again, it appears that switching is perceived to have higher costs than back sourcing.

The pre-switching costs section includes five items related to significant time and resources required to find new employees or vendors. Each of the five items provides similar significance levels and mean responses. None of the back sourcing-switching comparisons were significantly different at the 0.05 level, while all of the continue-discontinue test significances were less than 0.05. Results suggest that respondents

perceive the cost of finding new employees and vendors to be higher than actually results indicate.

The last section of the switching costs scale is related to sunk costs. These items are used to measure the time, energy, effort, resources, and money invested in the relationship with the outsourcing vendor. Similar to the pre-switching costs items, each of the item comparisons between the backsourcing and switching responses is not significant at the 0.05 level, the continue-discontinue test significances are all less than 0.05, and the continuing responses are greater than the discontinue responses. These results indicate that respondents continuing with the same vendor possibly perceive the sunk costs to be higher than they actually are. A second explanation is that the sunk costs in these cases is indeed high, thus preventing the firms from switching or backsourcing.

It appears that the perceived costs of switching and backsourcing may be higher than actual results indicate. Support for this proposal is found in the fact that in most cases, mean switching costs for the continuing respondents are higher than for the backsourcing and switching groups. Another explanation is that in many of the cases, the higher mean responses for the continuing group may be indicative of a situation where the actual costs are indeed higher for this group and that is why they have chosen to continue with the current vendor as opposed to switching or backsourcing.

Table 33. Switching Costs Scale Items
(Unexpected significances are bolded)

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continu e N=69	t-test significances			
						B-S	B-C	S-C	Cont-Dis
Reaction of Other Vendors									
Morale of other vendors dropped after termination of contract	Mode	4	1	4	4				
	Mean	3.087	2.706	2.928	3.145	0.260	0.819 *	0.189 *	0.360 *
	Std Dev	1.299	1.681	1.474	1.430				
After discontinuation, other vendors gained confidence in us	Mode	4	4	4	4				
	Mean	4.292	3.708	4.048	4.857	0.016 *	0.019	0.000	0.000
	Std Dev	1.104	1.068	1.121	1.462				
After discontinuation, a negative reaction from other vendors	Mode	4	1	4	4				
	Mean	2.915	2.345	2.676	2.909	0.026 *	0.981 *	0.023	0.289 *
	Std Dev	1.307	1.020	1.222	1.417				
Difficulty in Upgrading Management System									
Able to discontinue without a big investment in new mgmt sys	Mode	1	2	2	6				
	Mean	3.434	3.657	3.527	4.246	0.566	0.019	0.135 *	0.021
	Std Dev	1.681	1.827	1.737	1.977				
Discontinuation forced us to invest in a new mgmt system	Mode	2	1	1	6				
	Mean	3.088	3.303	3.178	4.375	0.587	0.000	0.007	0.000
	Std Dev	1.659	1.889	1.751	1.852				
Discontinuation changed the way we managed	Mode	1	1	1	4				
	Mean	2.910	3.317	3.080	3.938	0.313	0.002	0.113 *	0.003
	Std Dev	1.670	1.938	1.787	1.718				
Difficulty in Hiring and Retraining IT Personnel									
Difficult to locate and hire IT employees	Mode	1	1	1	1				
	Mean	2.817	2.312	2.606	3.563	0.120	0.024	0.000	0.001
	Std Dev	1.614	1.353	1.522	1.896				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Cost of locating, hiring, and training employees is high	Mode	1	1	1	6	0.709	0.001	0.001	0.000
	Mean	2.613	2.741	2.667	3.922				
	Std Dev	1.445	1.633	1.519	1.956				
We cannot hire acceptable people	Mode	1	1	1	2	0.709	0.001	0.001	0.000
	Mean	2.158	2.050	2.113	3.123				
	Std Dev	1.228	1.384	1.288	1.741				
Takes a long time for the internal development team to be productive	Mode	1	1	1	5	0.514	0.000	0.000	0.000
	Mean	3.010	2.790	2.918	4.188				
	Std Dev	1.532	1.544	1.532	1.762				
Time to hire new development team and be productive is long	Mode	2	2	2	5	0.522	0.001	0.000	0.000
	Mean	2.968	2.754	2.878	3.952				
	Std Dev	1.532	1.511	1.518	1.593				
After discontinuation, hired good people & they produced quickly	Mode	3	2	3	3	0.894	0.194 *	0.208 *	0.124 *
	Mean	3.220	3.172	3.200	3.609				
	Std Dev	1.558	1.675	1.599	1.633				
Magnitude of an Outsourcing Vendor Employee's Reaction									
Previous vendor made it difficult to discontinue contract	Mode	2	1	1	2	0.610	0.033	0.224 *	0.036
	Mean	2.489	2.691	2.573	3.145				
	Std Dev	1.660	1.901	1.757	1.558				
After discontinuation, vendor's reaction was least of problems	Mode	1	2	2	2	0.626	0.565 *	0.322 *	0.341 *
	Mean	3.037	3.239	3.122	2.855				
	Std Dev	1.744	1.986	1.840	1.597				
After discontinuation, the vendor was unhappy, but that was it	Mode	4	2	2	2	0.250	0.001	0.123 *	0.002
	Mean	3.768	3.293	3.569	2.726				
	Std Dev	1.804	1.924	1.859	1.361				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Uncertainty									
After discontinuation, not sure what level of service would be	Mode	2	2	2	5	0.857	0.000	0.003	0.000
	Mean	3.136	3.198	3.162	4.222				
	Std Dev	1.479	1.628	1.534	1.621				
After discontinuation, service was worse than before	Mode	1	2	4	4	0.266	0.000	0.001	0.000
	Mean	2.653	3.024	2.808	4.177				
	Std Dev	1.372	1.605	1.477	1.767				
Service from in-house can be worse than with current vendor	Mode	2	2	2	5	0.828	0.000	0.000	0.000
	Mean	2.777	2.857	2.811	4.406				
	Std Dev	1.563	1.752	1.635	1.680				
Post-switching behavioral and cognitive costs									
Bacsourcing requires learning new things	Mode	4	2	5	5	0.869	0.040	0.046	0.014
	Mean	3.842	3.780	3.816	4.492				
	Std Dev	1.690	1.719	1.692	1.635				
Unfamiliar with other developers (in-house or switching)	Mode	1	2	1	1	0.000 *	0.006	0.188 *	0.318 *
	Mean	1.978	3.177	2.480	2.746				
	Std Dev	1.245	1.462	1.458	1.736				
After discontinuation, had to learn "how system works" in-house	Mode	6	6	6	6	0.624	0.227 *	0.533 *	0.245 *
	Mean	3.899	4.109	3.987	4.349				
	Std Dev	2.082	1.864	1.985	1.824				
Discontinuation means learning new policies	Mode	1	5	1	5	0.001 *	0.000	0.669 *	0.002
	Mean	2.791	4.033	3.311	4.177				
	Std Dev	1.716	1.597	1.769	1.678				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Lost Performance Costs									
Previous vendor provided unique privileges	Mode	1	1	1	4	0.373	0.002	0.000	0.000
	Mean	2.674	2.353	2.539	3.645				
	Std Dev	1.627	1.647	1.634	1.728				
By continuing with the vendor, certain unique benefits retained	Mode	1	1	1	6	0.432	0.000	0.000	0.000
	Mean	2.729	2.434	2.606	4.875				
	Std Dev	1.664	1.735	1.691	1.441				
After discontinuation, certain benefits are not retained	Mode	4	2	4	5	0.836	0.000	0.000	0.000
	Mean	3.186	3.265	3.219	4.730				
	Std Dev	1.706	1.755	1.717	1.610				
Lost preferential treatment after discontinuation	Mode	1	4	4	4	0.898	0.000	0.002	0.000
	Mean	2.821	2.862	2.838	3.934				
	Std Dev	1.447	1.488	1.455	1.864				
Setup Costs									
Significant time required to explain things to new dev. Team	Mode	2	5	2	6	0.030 *	0.000	0.001	0.000
	Mean	3.172	4.003	3.520	5.188				
	Std Dev	1.702	1.727	1.751	1.497				
After discontinuation, had to explain processes to new team	Mode	5	6	5	6	0.001 *	0.000	0.026	0.000
	Mean	3.485	4.812	4.041	5.531				
	Std Dev	1.766	1.615	1.818	1.347				
Much time involved in beginning to use a new development team	Mode	2	4	2	6	0.094	0.000	0.025	0.000
	Mean	3.378	4.025	3.649	4.875				
	Std Dev	1.631	1.818	1.732	1.732				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Pre-switching search and evaluation costs									
After discontinuation, significant time required to get new employees	Mode	1	2	1	4	0.457	0.000	0.000	0.000
	Mean	2.496	2.738	2.597	4.063				
	Std Dev	1.344	1.581	1.444	1.779				
After discontinuation, significant resources to find new employees	Mode	1	2	2	4	0.092	0.000	0.002	0.000
	Mean	2.442	3.002	2.676	4.125				
	Std Dev	1.296	1.627	1.461	1.785				
After discontinuation, extensive search to find new employees	Mode	1	2	2	4	0.108	0.000	0.010	0.000
	Mean	2.346	2.932	2.592	3.922				
	Std Dev	1.379	1.811	1.591	1.783				
Locating new employees takes time	Mode	1	2	2	4	0.253	0.000	0.000	0.000
	Mean	2.477	2.886	2.648	4.308				
	Std Dev	1.446	1.743	1.580	1.736				
After discontinuation, conducted a search for employees	Mode	1	2	1	5	0.135	0.000	0.002	0.000
	Mean	3.122	3.759	3.389	4.953				
	Std Dev	1.924	1.936	1.944	1.503				
Sunk Costs									
Time, energy, and effort put into relationship with vendor	Mode	4	2	4	6	0.696	0.000	0.001	0.000
	Mean	3.963	4.114	4.026	5.297				
	Std Dev	1.761	1.769	1.755	1.198				
Significant investment with vendor	Mode	5	5	5	6	0.791	0.000	0.001	0.000
	Mean	4.462	4.364	4.421	5.462				
	Std Dev	1.661	1.700	1.668	1.024				
Significant resources invested	Mode	6	2	6	6	0.764	0.007	0.042	0.003
	Mean	4.264	4.377	4.311	5.077				
	Std Dev	1.692	1.735	1.701	1.396				

Item		Back source N=53	Switch N=38	Discon- tinue N=91	Continue N=69	t-test significances			
						B-S	B-C	S-C	Cont- Dis
Significant time and money invested	Mode	6	6	6	5	0.615	0.001	0.003	0.000
	Mean	4.769	4.576	4.688	5.646				
	Std Dev	1.602	1.836	1.696	1.129				
Significant time and money invested in the relationship	Mode	6	2	6	7	0.440	0.004	0.002	0.000
	Mean	4.928	4.616	4.797	5.766				
	Std Dev	1.691	1.926	1.789	1.199				

An overall evaluation of the t-tests reveals that trust, communication, vendor service, information product, lost performance costs, hiring costs, uncertainty, lost performance costs, pre-switching costs, and sunk costs appear to differentiate between outsourcing outcomes as expected. Many of the other dimensions evaluated had unexpected findings, especially with the service quality dimensions. Most of the switch-continue t-tests were not significant as expected, while at the same time many of the switch-backsource tests did show a significant difference between responses. These results are intriguing because they seem to indicate that service quality matters most in situations where a firm decides to backsource. One possible explanation is that firms backsource when service quality is poor, but switch vendors due to reasons other than service quality.

A further analysis reveals some mean response differences between groups to be larger than one. For the switching-continuing mean responses, seven dimensions stand out. Items representing these dimensions include five of six hiring costs, four of five pre-switching costs, four of five sunk costs, and four of five trust items, as well as all uncertainty cost, lost performance cost, and communication items. The largest difference among these item means was for the item "by continuing with the vendor, certain unique benefits retained." The mean response for those switching and continuing was 2.434 and 4.875 respectively, for a mean difference of 2.441. Among the back sourcing-continuing groups, nine dimensions stood out. Three of four lost performance costs, responsiveness, and assurance item differences were greater than one, while all of the item differences used for uncertainty costs, setup costs, pre-switching costs, sunk costs, trust, and communication were greater than one. Again, the greatest item mean difference was for

the unique benefits item which had a mean continuing score 2.146 higher than the backsourcing mean. Overall, it seems that the uncertainty costs, lost performance costs, pre-switching costs, sunk costs, and trust items have the greatest difference among the three group means. This provides evidence for the impact these items have on the outsourcing decision.

Organizational Profiles

Using the results from item t-tests, three profiles of organizations were developed:

- (1) organizations which continued their application development outsourcing contract
- (2) organizations which backsourced their application development project
- (3) organizations which switched to another vendor for application development.

Intuitively, backsourcing and switching responses should be similar since both likely indicate dissatisfaction. In situations where these two means are significantly different, findings are of particular interest. Similarly, when responses between the remaining groups (backsourcing-continuation, switching-continuation, and continuing-discontinuation) are not significantly different, those results are of interest since these group pairs represent responses from groups with different outsourcing outcomes.

Those items classified as “of interest” were then further investigated. The items whose expected mean responses were hypothesized to be significantly different, yet the response was insignificantly different, were evaluated to see if the mean response for that item was more closely associated with the average continuation or discontinuation response. The mean responses across all items for those who backsourced was 3.64, 3.79 for those who

switched, and 4.56 for those who continued. An aggregate mean response for those who discontinued was 3.72. An example follows:

For the Commitment item, *client provided prespecified support*, the continue-discontinue t-statistic was 0.328, thus classifying the item as being “of interest.” The mean response for this item for those who continued was 5.530, while the mean for those who discontinued was 5.325. Since the item mean response for those who continued (5.530) was closer to the overall continue response (4.56), the item was further classified as of interest to the discontinue group. Therefore the item was included in the profile of those who discontinued.

For the following items, insignificant differences were found between the continue and discontinue groups, while at the same time discovering relatively different continue responses. Thus, the continue respondents indicated either more or less relative agreement with these items. An indication of whether the mean response was greater or less than the overall mean response for continuation items in parentheses.

- Relationship Quality
 - Both parties did not have different corporate cultures (less than)
 - Both parties had compatible corporate cultures (less than)
- Satisfaction
 - Training; scale = incomplete...complete (less than)
 - Training; scale=low...high (less than)

- Switching Costs
 - Morale of other vendors dropped after termination of contract (less than)
 - After discontinuation, a negative reaction from other vendors was a concern (less than)
 - Discontinuation changed the way we managed (less than)
 - After discontinuation, hired good people and they produced quickly (less than)
 - Previous vendor made it difficult to discontinue contract (less than)
 - After discontinuation, vendor's reaction was the least of problems (less than)
 - After discontinuation, the vendor was unhappy, but that was it (less than)
 - Unfamiliar with other developers (in-house or switching) (less than)

Further analysis resulted in the following items which assist in the creation of a profile for those respondents who indicated back-sourcing application development. These items were selected due to an insignificant difference between back-sourcing and continuing responses and their much lower mean response rate relative to the continuing mean response.

- Relationship Quality
 - Both parties do not take advantage of each other (greater than)
 - Client provided prespecified support (greater than)

- Vendor is responsible for a large portion of systems development (greater than)
- Satisfaction
 - Quickness of processing of requests; scale=slow...fast (less than)
 - Quickness of processing of requests; scale=untimely...timely (less than)
- Service Quality
 - Up-to-date hardware and software (greater than)
 - Physical facilities were appealing (greater than)
 - Promises kept by vendor and client (greater than)
- Switching Costs
 - After discontinuation, other vendors gained confidence in us (greater than)
 - Unfamiliar with other developers (in-house or switching) (less than)

The following items were found to be “of interest” for respondents who indicated switching behavior. As with the back-sourcing respondents previously mentioned, these items were selected due to an insignificant difference between switching and continuing responses and their more different mean response rates relative to the continuing mean response.

- Relationship Quality
 - Client provided prespecified support (greater than)

- Vendor is responsible for a large portion of systems development (greater than)
- Service Quality
 - Up-to-date hardware and software (greater than)
 - Visually appealing physical facilities (greater than)
 - Employees well-dressed and neat (greater than)
 - Physical facilities were appealing (greater than)
 - Promises kept by client and vendor (greater than)
 - Vendor dependable (greater than)
 - Vendor kept promises (greater than)
 - Error-free records provided (greater than)
 - Vendor showed sincere interest (greater than)
 - Vendor said when services would be performed (greater than)
 - Prompt service (greater than)
 - Willingness to help (greater than)
 - Employees never too busy to help (greater than)
 - Vendor behavior instilled confidence (greater than)
 - Users felt safe with vendor employees (greater than)
 - Courteous employees (greater than)
 - Individual attention (greater than)
 - Vendor hours are convenient (greater than)
 - Personal attention (greater than)
 - Vendor had user's best interest at heart (greater than)

- Vendor understood needs of users (greater than)
- Switching Costs
 - After discontinuation, had to learn “how system works” in-house (greater than)
 - Discontinuation means learning new policies (greater than)

Two switching cost items were found to have a significant difference between back-sourcing and switching responses, while both also had significantly different responses from the continuation group. These items were *significant time required to explain things to a new development team* and *after discontinuation, had to explain processes to new team*.

Based on the results of the item-level analysis using t-tests, it appears that the switching group displayed the most surprising results. Those who switched vendors responded similar to the continuation group and less similar to the back-sourcing group. This indicates that although the respondents did discontinue the contract, they were not overly dissatisfied with the service. Thus, it seems they were content with the service from the vendor but switched for reasons other than service. Conversely, the back-sourcing group was relatively dissatisfied with the service quality and thus brought the application development back in-house.

Factor Analysis

Factor analysis was performed to remove bad items and to reduce the number of measurement items included in each measurement scale into a smaller set of dimensions (factors) to be utilized in further data analysis (Hair, Anderson, Tatham, & Black, 1992). Factor analysis of each scale was performed independently of the other scales. The maximum likelihood method was used with varimax rotation. Factor scores are reported in Tables 34, 36, 38, and 40.

Three steps were taken in deciding upon which items to retain in the factor analysis process. First, statistical significance for each factor loading was determined based on the recommendation of Stevens (1992). Factor loading significance was calculated on the critical values for a correlation coefficient at $\alpha = .01$ for a two-tailed test. For a sample size of 160, only absolute value loadings greater than $2 (.2045) = 0.409$ are considered statistically significant. Items with factor loadings less than 0.409 were dropped from consideration. Second, items whose factor score was greater than 0.409 were further examined. Items were dropped from consideration if the second-highest factor loading score was less than 0.25 below the highest factor score. Third, items loading on a factor other than the one traditionally loaded with, based on the literature, were dropped from consideration. If items were removed from consideration after the three steps were taken, the factor analysis was performed again.

Factor Development

Table 34 shows the factor loadings for relationship quality items. A total of three runs were necessary to obtain a completely significant set of factors. Ultimately, two of the five factors surfaced. Three of the original five Trust items and four of the original Communication items were found to have significant factor loadings (Table 34c).

Table 34a. Rotated Factor Matrix
Relationship Quality First run

	Factor			
	1	2	3	4
Trust items				
Vendor made beneficial decisions for us	.454	.701	.105	.098
Vendor always willing to provide assistance to us	.285	.743	.069	.131
Vendor was always sincere	.340	.811	.196	.017
Commitment items				
Vendor performed prespecified agreements well	.449	.677	.291	.027
Our firm faithfully provided prespecified support	.125	.127	.627	-.072
Vendor and company always tried to keep promises	.351	.550	.509	-.122
Culture items				
Vendor and company had different corporate cultures	.033	.007	-.208	.552
Vendor and company had a hard time understanding one another's business rules and forms	.322	.317	.028	.252
Vendor and company were similar in regards to the processes of problem solving, decision making, and communication	.346	.231	.398	.601
Interdependence Items				
Vendor and company effectively supported activities requiring mutual support	.328	.481	.416	.078
Vendor supported and managed most of the core IT	.006	.240	.089	.165
Communication Items				
Communication between vendor and company was timely	.640	.263	.261	.215
Communication between vendor and company was accurate	.797	.278	.050	.042
Communication between vendor and company was complete	.867	.247	.183	.143
Communication between vendor and company was credible	.707	.395	.270	.002

Table 34b. Rotated Factor Matrix
Relationship Quality Second Run

	Factor	
	1	2
Vendor made beneficial decisions for us	.763	.348
Vendor always willing to provide assistance to us	.831	.157
Vendor was always sincere	.837	.247
Our firm faithfully provided prespecified support	.233	.186
Vendor and company had different corporate cultures	.002	.057
Communication between vendor and company was timely	.400	.635
Communication between vendor and company was accurate	.386	.727
Communication between vendor and company was complete	.398	.851
Communication between vendor and company was credible	.519	.657

Table 34c. Rotated Factor Matrix
Relationship Quality Third Run

	Factor	
	Communication	Trust
Vendor made beneficial decisions for us	.437	.719
Vendor always willing to provide assistance to us	.255	.808
Vendor was always sincere	.346	.798
Communication between vendor and company was timely	.677	.320
Communication between vendor and company was accurate	.768	.298
Communication between vendor and company was complete	.895	.292
Communication between vendor and company was credible	.714	.433

Table 35. Relationship Quality Factors and Items
(*backsourcing instrument*)

Items Comprising the Trust Factor
1. In our relationship, the outsourcing vendor made decisions beneficial to us.
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.
Items Comprising the Communication Factor
1. The manner and methods of communication quality between both the outsourcing vendor and the company were timely.
2. The manner and methods of communication quality between both the outsourcing vendor and the company were accurate.
3. The manner and methods of communication quality between both the outsourcing vendor and the company were complete.
4. The manner and methods of communication quality between both the outsourcing vendor and the company were credible.

Factor analysis was performed on the satisfaction items, with factor loadings shown in Table 36. Consistent with the factor loading results of Sengupta and Zviran (1997), who also used the UIS scale to measure outsourcing satisfaction in an outsourcing relationship, four factors were found as opposed to the three typically found with the UIS scale. Attitude and communication items loaded on the same factor, which is identified as “Vendor Service.” Processing of change requests constitutes the second factor, “Timeliness.” Reliability, relevance, accuracy, precision, and completeness combine to create the third factor, “Information Product.” Two items regarding the user understanding of the system comprises the last factor “User Understanding.” See Table 37 for items comprising each factor.

Table 36a. Rotated Factor Matrix
Satisfaction First Run

	Factor			
	1	2	3	4
Vendor's Staff				
Relationship with the outsourcing vendor (dissonant-harmonious)	.428	.576	.226	.233
Relationship with the outsourcing vendor (bad-good)	.455	.556	.235	.253
Attitude of the outsourcing vendor's staff (belligerent-cooperative)	.297	.755	.246	.148
Attitude of the outsourcing vendor's staff (negative-positive)	.312	.771	.252	.162
Communication with the outsourcing vendor's staff (dissonant-harmonious)	.324	.743	.213	.277
Communication with the outsourcing vendor's staff (destructive-productive)	.382	.725	.228	.269
Timeliness				
Processing of requests for changes to existing systems (slow-fast)	.320	.284	.243	.814
Processing of requests for changes to existing systems (untimely-timely)	.326	.265	.244	.862
Time required for new systems development (unreasonable-reasonable)	.427	.242	.194	.431
Time required for new systems development (unacceptable-acceptable)	.434	.259	.231	.487
Information Output				
Reliability of output information (low-high)	.764	.367	.249	.193
Reliability of output information (inferior-superior)	.763	.403	.230	.226
Relevancy of output information (useless-useful)	.742	.305	.300	.193
Relevancy of output information (irrelevant-relevant)	.736	.296	.281	.214
Accuracy of output information (inaccurate-accurate)	.869	.243	.207	.252
Accuracy of output information (low-high)	.866	.252	.203	.258
Precision of output information (low-high)	.880	.254	.197	.205
Precision of output information (uncertain-definite)	.880	.270	.200	.192
Completeness of the output information (insufficient-sufficient)	.802	.295	.297	.227
Completeness of the output information (inadequate-adequate)	.801	.284	.285	.183
Knowledge and Involvement				
Degree of IS training provided to users (incomplete-complete)	.226	.306	.522	.108
Degree of IS training provided to users (low-high)	.243	.285	.525	.115
Users' understanding of systems (insufficient-sufficient)	.207	.073	.910	.225
Users' understanding of systems (incomplete-complete)	.219	.059	.919	.209
Users' feelings of participation (negative-positive)	.270	.402	.648	.114
Users' feelings of participation (insufficient-sufficient)	.223	.389	.627	.102

Table 36b. Rotated Factor Matrix
Satisfaction Second Run

	Factor			
	Information Output	Vendor's Staff	User understanding	Timeliness
Attitude of the outsourcing vendor's staff (belligerent-cooperative)	.306	.832	.148	.132
Attitude of the outsourcing vendor's staff (negative-positive)	.322	.847	.156	.145
Communication with the outsourcing vendor's staff (dissonant-harmonious)	.364	.703	.127	.283
Communication with the outsourcing vendor's staff (destructive-productive)	.423	.687	.137	.275
Processing of requests for changes to existing systems (slow-fast)	.343	.297	.225	.801
Processing of requests for changes to existing systems (untimely-timely)	.345	.278	.231	.860
Reliability of output information (low-high)	.784	.357	.183	.188
Reliability of output information (inferior-superior)	.782	.399	.159	.219
Relevancy of output information (useless-useful)	.755	.335	.242	.177
Relevancy of output information (irrelevant-relevant)	.746	.332	.231	.196
Accuracy of output information (inaccurate-accurate)	.875	.258	.160	.239
Accuracy of output information (low-high)	.873	.262	.153	.248
Precision of output information (low-high)	.899	.243	.139	.198
Precision of output information (uncertain-definite)	.899	.263	.136	.185
Completeness of the output information (insufficient-sufficient)	.826	.290	.237	.218
Completeness of the output information (inadequate-adequate)	.822	.288	.222	.174
Users' understanding of systems (insufficient-sufficient)	.244	.173	.906	.188
Users' understanding of systems (incomplete-complete)	.258	.164	.900	.172

Table 37. Satisfaction Factors and Items
(*backsourcing instrument*)

Items Comprising the Vendor Service Factor	
1.	Attitude of the outsourcing vendor's staff. (belligerent-cooperative)
2.	Attitude of the outsourcing vendor's staff. (negative-positive)
3.	Communication with the outsourcing vendor's staff. (dissonant-harmonious)
4.	Communication with the outsourcing vendor's staff. (destructive-productive)
Items Comprising the Timeliness Factor	
1.	Processing of requests for changes to existing systems. (slow-fast)
2.	Processing of requests for changes to existing systems. (untimely-timely)
Items Comprising the Information Product Factor	
1.	Reliability of output information. (low-high)
2.	Reliability of output information. (inferior-superior)
3.	Relevancy of output information. (useless-useful)
4.	Relevancy of output information. (irrelevant-relevant)
5.	Accuracy of output information. (inaccurate-accurate)
6.	Accuracy of output information. (low-high)
7.	Precision of output information. (low-high)
8.	Precision of output information. (uncertain-definite)
9.	Completeness of the output information. (insufficient-sufficient)
10.	Completeness of the output information. (inadequate-adequate)
Items Comprising the User Understanding Factor	
1.	Users' understanding of systems. (insufficient-sufficient)
2.	Users' understanding of systems. (incomplete-complete)

Three factors emerged from the factor analysis of service quality, similar to that of Pitt, Watson, and Kavan (1995) in a study of the SERVQUAL in an IS environment. The first factor, Tangible, includes three of the four items traditionally loading together. The Reliability factor includes four of the five traditional reliability measures. The third factor, "Attention," contains the all five traditional Empathy items as well as two of four Responsiveness items (see Table 38).

Table 38a. Rotated Factor Matrix
Service Quality First Run

	Factor				
	1	2	3	4	5
Tangibility					
Vendor had up-to-date hardware and software	.247	.292	.429	.158	-.042
Vendor's physical facilities were visually appealing	.055	.108	.922	-.091	-.059
Vendor's employees were well dressed and neat in appearance	.166	.161	.496	.189	.031
Appearance of the physical facilities of the vendor	.088	.039	.864	-.021	.099
Reliability					
When the outsourcing vendor promised to do something by a certain time, they did	.127	.627	.065	-.060	-.119
Vendor shows a sincere interest in solving problems	.580	.521	.139	.103	.271
Vendor is dependable	.392	.775	.056	.046	.489
Vendor provides services at the times they are promised	.342	.751	.200	.098	.235
Vendor insists on error-free records	.237	.530	.250	.134	.010
Responsiveness					
Vendors tells users exactly when services will be performed	.413	.533	.234	.254	-.014
Vendor's employees give prompt service to users	.628	.455	.230	.383	.178
Vendor's employees are willing to help users	.755	.316	.160	.291	.110
Vendor's employees are never too busy to respond to users' requests	.692	.300	.102	.263	-.035
Assurance					
Vendor's behavior instills confidence in users	.674	.548	.206	.165	-.011
Users feel safe in transactions with vendor employees	.686	.498	.151	.136	-.024
Vendor's employees are consistently courteous	.541	.345	.297	.231	.026
Vendor's employees have the knowledge to do their job well	.405	.688	.152	.157	.057
Empathy					
Vendor gives users individual attention	.854	.280	.128	-.116	-.037
Vendor has operation hours convenient to all users	.640	.138	.194	.191	.126
Vendor's employees give users personal attention	.947	.112	.164	-.112	.089
Vendor has the users' best interests at heart	.670	.456	.040	-.021	-.063
Vendor's employees understand specific needs of users	.641	.443	.054	.019	.146

Table 38b. Rotated Factor Matrix
Service Quality Second Run

	Factor		
	1	2	3
Vendor's physical facilities were visually appealing	.076	.083	.929
Vendor's employees were well dressed and neat in appearance	.161	.199	.469
Appearance of the physical facilities of the vendor	.104	.091	.849
When the outsourcing vendor promised to do something by a certain time, they did	.114	.555	.078
Vendor is dependable	.370	.851	.035
Vendor provides services at the times they are promised	.297	.844	.176
Vendor insists on error-free records	.212	.514	.244
Vendor's employees are willing to help users	.715	.416	.120
Vendor's employees are never too busy to respond to users' requests	.663	.325	.081
Vendor's employees have the knowledge to do their job well	.374	.704	.130
Vendor gives users individual attention	.856	.260	.120
Vendor has operation hours convenient to all users	.621	.240	.153
Vendor's employees give users personal attention	.935	.174	.145

Table 38c. Rotated Factor Matrix
Service Quality Third Run

	Factor		
	Attention	Reliability	Tangible
Vendor's physical facilities were visually appealing	.076	.081	.927
Vendor's employees were well dressed and neat in appearance	.166	.179	.471
Appearance of the physical facilities of the vendor	.102	.095	.850
When the outsourcing vendor promised to do something by a certain time, they did	.126	.540	.078
Vendor is dependable	.386	.845	.035
Vendor provides services at the times they are promised	.310	.848	.176
Vendor insists on error-free records	.222	.505	.244
Vendor's employees are willing to help users	.723	.400	.122
Vendor's employees are never too busy to respond to users' requests	.671	.305	.083
Vendor gives users individual attention	.862	.235	.122
Vendor has operation hours convenient to all users	.626	.221	.156
Vendor's employees give users personal attention	.937	.161	.147

Table 39. Service Quality Factors and Items
(*backsourcing instrument*)

Items Comprising the Tangible Factor	
1.	The outsourcing vendor's physical facilities were visually appealing.
2.	The outsourcing vendor's employees were well dressed and neat in appearance.
3.	The appearance of the physical facilities of the outsourcing vendor was in keeping with the kind of services provided.
Items Comprising the Reliability Factor	
1.	When the outsourcing vendor promised to do something by a certain time, they did.
2.	When users had a problem, the outsourcing vendor showed a sincere interest in solving it.
3.	The outsourcing vendor was dependable.
4.	The outsourcing vendor provided their services at the times they promised to do so.
5.	The outsourcing vendor insisted on error-free records.
Items Comprising the Attention Factor	
1.	The outsourcing vendor employees were always willing to help users.
2.	The outsourcing vendor employees were never too busy to respond to users'
3.	The outsourcing vendor gave users individual attention.
4.	The outsourcing vendor had operation hours convenient to all their users.
5.	The outsourcing vendor had employees who gave users personal attention.
6.	The outsourcing vendor had the users' best interest at heart.
7.	The employees of the outsourcing vendor understood the specific needs of their users.

Tables 40 and 41 show the factor loadings for the switching cost scale. Twenty-five of the 39 items loaded as predicted. A total of seven factors were discovered. Table 42 shows the factors and items loading on each one. The factors discovered are Pre-switching Costs, Sunk Costs, Lost Performance Costs, Hiring Costs, Post-switching Costs, Management Costs, and Reaction of Other Vendors. Each of these factors relate to a dimension of switching costs from the literature review and included in the scales adopted for this instrument (Jones, Mothersbaugh, and Beatty 2002; Weiss and Anderson 1992).

Table 40a. Rotated Factor Matrix
Switching Costs (Weiss & Anderson) First Run

	Factor			
	1	2	3	4
Morale of other vendors dropped after this contract was terminated	.127	-.037	.051	.958
After discontinuing, other vendors gained confidence in us	-.006	-.085	.029	-.273
Discontinuing this contract provoked a negative reaction with our other vendors	.117	.023	.051	.643
We were able to backsource without a significant investment in resources to create a new management system.	.181	.381	.538	-.061
Discontinuing forced us to invest in setting up a new management system	.195	.726	.320	.087
Backsourcing required radical changes in the way we managed	.383	.629	.214	.112
After discontinuing, it was difficult to hire good IT employees	.882	.094	.133	.093
After discontinuing, locating, hiring & training costs were high	.784	.429	.116	.119
After discontinuing, we could not attract acceptable people to support our applications development and maintenance	.740	.122	.248	.149
After discontinuing, it took a long time for the internal development team to become productive	.503	.395	.489	.075
After discontinuing, we hired experienced people and had them producing results within a reasonable amount of time	.244	-.002	.836	.036
After discontinuing, the total length of time to establish a new app dev team and for them to become productive was long	.545	.336	.364	.045
The previous vendor made it difficult for us to discontinue	.157	.311	.078	.130
After discontinuing, the vendor's reaction was not a problem	.009	-.322	-.012	-.013
After discontinuing, the vendor was unhappy, but that was it	-.060	-.181	.003	.002

Table 40b. Rotated Factor Matrix
Switching Costs (Weiss & Anderson) Second Run

	Factor		
	Hiring Costs	Management Costs	Reaction of Other Vendors
Morale of other vendors dropped after this contract was terminated	.135	.048	.809
Discontinuing this contract provoked a negative reaction with our other vendors	.084	.062	.765
Discontinuing forced us to invest in setting up a new management system	.189	.754	.046
Backsourcing required radical changes in the way we managed	.325	.766	.078
After discontinuing, it was difficult to hire good IT employees	.867	.195	.098
After discontinuing, locating, hiring & training costs were high	.760	.462	.098
After discontinuing, we could not attract acceptable people to support our applications development and maintenance	.756	.205	.164

Table 41a. Rotated Factor Matrix
Switching Costs (Jones, Mothersbaugh, and Betty) First Run

	Factor				
	1	2	3	4	5
After discontinuing the contract, we were not sure what the level of service would be.	.273	-.150	-.278	-.328	-.151
After discontinuing the contract, the service we received was worse than the service previously received.	-.101	-.220	-.285	-.268	-.208
Before discontinuing the contract, we felt the service from in-house developers could be worse than the service we were receiving at that time.	-.309	-.059	-.407	-.151	-.051
Before discontinuing the contract, we felt that backsourcing would require learning how to do things differently.	.226	.054	.147	.499	.011
I was unfamiliar with policies of our in-house development team	.125	-.106	.065	.437	.059
After discontinuing the contract, we had to learn how the "system works" with the in-house development group.	.047	.010	.104	.667	.139
Discontinuing the outsourcing relationship meant we had to learn about the policies of our in-house development group.	.222	-.025	.283	.718	.125
The previous outsourcing vendor provided us with particular privileges we would not receive elsewhere.	.254	.093	.661	.132	-.057
By continuing to use the previous outsourcing vendor, certain benefits would have been received that would not have been received if the relationship were terminated.	.211	.227	.803	.105	.106
After discontinuing the contract, certain benefits were not retained.	.266	.131	.744	.183	.193
We lost preferential treatment after we discontinued the outsourcing relationship.	.219	.106	.602	.314	.130
After backsourcing, significant time was required to explain our application needs to the in-house development group.	-.478	-.054	-.361	-.308	-.522
After discontinuing the outsourcing contract, we had to explain our processes and systems to the in-house development group.	.304	.080	.185	.405	.801
There was not much time and effort involved in beginning to use the in-house development group.	-.424	-.068	-.196	-.183	-.146
After we discontinued the contract, it took a significant amount of time and effort to locate new IT employees.	.827	.050	.214	.001	.180
After discontinuing the contract, we had to devote significant resources to finding new IT employees.	.869	.069	.209	.216	.085
After we discontinued the contract, we had to conduct an extensive search to find new IT employees.	.890	.086	.199	.169	.049
Locating new IT employees took a great deal of time.	.810	.117	.245	.261	-.028
After discontinuing the contract, we had to conduct a search for new IT employees.	.595	.064	.178	.166	.105
Significant time, energy, and effort went into building and maintaining the relationship with our previous outsourcing vendor.	.090	.738	.128	.180	.023
Overall, we had a significant investment in the relationship with the previous outsourcing vendor.	.124	.847	.170	.066	-.022
All things considered, we have devoted significant resources into previous dealings with the previous outsourcing vendor.	.129	.765	.080	-.069	-.005
We have spent significant time and money with the previous outsourcing vendor.	.029	.869	.093	-.031	.092
We have not invested significant time and money in the relationship with the previous outsourcing vendor.	-.010	.754	.067	-.123	.053

Table 41b. Rotated Factor Matrix
Switching Costs (Jones, Mothersbaugh, and Beatty) Second Run

	Factor				
	1	2	3	4	5
Before discontinuing the contract, we felt that backsourcing would require learning how to do things differently.	.220	.050	.112	.514	-.060
I was unfamiliar with policies of our in-house development team	.114	-.097	.069	.432	.188
After discontinuing the contract, we had to learn how the "system works" with the in-house development group.	.041	.012	.090	.715	-.043
Discontinuing the outsourcing relationship meant we had to learn about the policies of our in-house development group.	.210	-.021	.276	.740	.080
The previous outsourcing vendor provided us with particular privileges we would not receive elsewhere.	.254	.096	.642	.109	.103
By continuing to use the previous outsourcing vendor, certain benefits would have been received that would not have been received if the relationship were terminated.	.212	.224	.806	.141	-.035
After discontinuing the contract, certain benefits were not retained.	.268	.128	.757	.239	-.089
We lost preferential treatment after we discontinued the outsourcing relationship.	.219	.105	.600	.323	.026
After discontinuing the outsourcing contract, we had to explain our processes and systems to the in-house development group.	-.323	-.085	-.251	-.512	-.163
After we discontinued the contract, it took a significant amount of time and effort to locate new IT employees.	.830	.047	.215	.072	-.141
After discontinuing the contract, we had to devote significant resources to finding new IT employees.	.869	.070	.204	.241	-.005
After we discontinued the contract, we had to conduct an extensive search to find new IT employees.	.891	.090	.200	.183	.069
Locating new IT employees took a great deal of time.	.801	.121	.233	.245	.089
After discontinuing the contract, we had to conduct a search for new IT employees.	.595	.061	.184	.184	.051
Significant time, energy, and effort went into building and maintaining the relationship with our previous outsourcing vendor.	.083	.749	.138	.151	.266
Overall, we had a significant investment in the relationship with the previous outsourcing vendor.	.118	.851	.177	.035	.145
All things considered, we have devoted significant resources into previous dealings with the previous outsourcing vendor.	.128	.763	.094	-.075	.058
We have spent significant time and money with the previous outsourcing vendor.	.033	.890	.085	.021	-.278
We have not invested significant time and money in the relationship with the previous outsourcing vendor.	-.007	.750	.061	-.083	-.234

Table 41c. Rotated Factor Matrix
Switching Costs (Jones, Mothersbaugh, and Beatty) Third Run

	Factor			
	Pre-switching	Sunk	Lost Performance	Post-switching
Before discontinuing the contract, we felt that back-sourcing would require learning how to do things differently.	.220	.063	.124	.510
I was unfamiliar with policies of our in-house development team	.118	-.095	.061	.460
After discontinuing the contract, we had to learn how the "system works" with the in-house development group.	.048	.019	.117	.669
Discontinuing the outsourcing relationship meant we had to learn about the policies of our in-house development group.	.212	-.011	.284	.752
The previous outsourcing vendor provided us with particular privileges we would not receive elsewhere.	.255	.098	.631	.136
By continuing to use the previous outsourcing vendor, certain benefits would have been received that would not have been received if the relationship were terminated.	.212	.231	.815	.119
After discontinuing the contract, certain benefits were not retained.	.272	.137	.759	.205
We lost preferential treatment after we discontinued the outsourcing relationship.	.224	.111	.598	.311
After we discontinued the contract, it took a significant amount of time and effort to locate new IT employees.	.824	.055	.224	.036
After discontinuing the contract, we had to devote significant resources to finding new IT employees.	.871	.073	.209	.226
After we discontinued the contract, we had to conduct an extensive search to find new IT employees.	.892	.091	.197	.182
Locating new IT employees took a great deal of time.	.804	.121	.230	.259
After discontinuing the contract, we had to conduct a search for new IT employees.	.596	.068	.185	.175
Significant time, energy, and effort went into building and maintaining the relationship with our previous outsourcing vendor.	.091	.742	.120	.162
Overall, we had a significant investment in the relationship with the previous outsourcing vendor.	.121	.848	.162	.045
All things considered, we have devoted significant resources into previous dealings with the previous outsourcing vendor.	.127	.765	.079	-.069
We have spent significant time and money with the previous outsourcing vendor.	.032	.865	.105	-.031
We have not invested significant time and money in the relationship with the previous outsourcing vendor.	-.011	.753	.070	-.118

Table 42. Switching Cost Factors and Items
(*backsourcing instrument*)

Items Comprising the Pre-Switching Factor
1. After we discontinued the contract, it took a significant amount of time and effort to locate new IT employees.
2. After discontinuation the contract, we had to devote significant resources to finding new IT employees.
3. After we discontinued the contract, we had to conduct an extensive search to find new IT employees.
4. Locating new IT employees took a great deal of time.
5. After discontinuation the contract, we had to conduct a search for new IT employees.
Items Comprising the Sunk Costs Factor
1. Significant time, energy, and effort went into building and maintaining the relationship with our previous outsourcing vendor.
2. Overall, we had a significant investment in the relationship with the previous outsourcing vendor.
3. All things considered, we have devoted significant resources into previous dealings with the previous outsourcing vendor.
4. We have spent significant time and money with the previous outsourcing vendor.
5. We have not invested significant time and money in the relationship with the previous outsourcing vendor.
Items Comprising the Lost Performance Factor
1. The previous outsourcing vendor provided us with particular privileges we would not have elsewhere.
2. By continuing to use the previous outsourcing vendor, certain benefits would have been received that would not have been received if the relationship were terminated.
3. After discontinuation the contract, certain benefits were not retained.
4. We lost preferential treatment after we discontinued the outsourcing relationship.
Items Comprising the Hiring Factor
1. After discontinuation the contract, we found it very difficult to locate and hire good IT employees.
2. After discontinuation the contract, the cost of locating, hiring, and training new IT employees was extraordinarily high.
3. After discontinuation the contract, we could not attract the people we considered acceptable to support our applications development and maintenance.
Items Comprising the Post-Switching Factor
1. Before discontinuation the contract, we felt that backsourcing would require learning how to do things differently.
2. I was unfamiliar with the policies of our in-house development group.
3. After discontinuation the contract, we had to learn how the "system works" with the in-house development group.
4. Discontinuation the outsourcing relationship meant we had to learn about the policies of our in-house development group.
Items Comprising the Management Factor
1. Discontinuation the outsourcing contract forced us to invest a good deal in setting up a new management system.
2. After discontinuation the contract, we hired experienced people and had them producing results within a reasonable amount of time.

Items Comprising the Reaction of Other Vendors Factor
1. The morale of all of our other outsourcing vendors dropped after this outsourcing contract was terminated.
2. Discontinuation this outsourcing contract provoked a negative reaction with our other outsourcing vendors.

Scale Reliability

Cronbach's alpha was used to measure reliability for each scale. Alpha scores for the relationship (0.9125), satisfaction (0.9709), switching costs (0.9083), and service quality (0.9045) scales are all greater than 0.9. Following the traditional guideline of reliability scores greater than .7 being significant (Hair, Jr. J. F. et al., 1992), all four scales were determined to be reliable.

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 (Armstrong and Overton 1977), 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 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 43. The insignificance indicates that non-response bias has not impacted the data set.

Table 43. 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

Controls

Control variables are used to “reduce the confounding of the independent variable – dependent variable relationship” (Emory, 1976, pg. 95). Control items were chosen for the current study based on past literature findings and an interview with a former CIO which identified the following variables as contributing to outsourcing failure. Each of the control items used were found to be significant in the logistic regression analysis as seen in Table 45. The controls used for the study include:

- The number of other systems involved with or integrated with the outsourced application. (Stephens 1996)

- The outsourcing vendor has the skills required to successfully develop object-oriented applications. (Baker, Murphy, & Fisher, 1988)
- The outsourcing vendor has the skills required to understand business processes for the application.(Baker, B. et al., 1988)
- The outsourcing vendor has the skills required to develop web-based systems.(Baker, B. et al., 1988)
- The outsourcing vendor was able to improve the quality/accuracy of the product. (interview with former CIO)
- The outsourcing vendor was able to decrease maintenance levels. (interview with former CIO)
- The estimated number of previous application development outsourcing contracts within the last five years that your firm has signed. (interview with former CIO) (Lacity and Willcocks 1998)
- Our organization performed poorly financially just prior to the initial outsourcing decision. (Strassman 1995)
- Our organization performed poorly financially, relative to the industry, just prior to the initial outsourcing decision. (Strassman 1995)

Logistic Regression Results

Logistic regression was employed to investigate the relationships that service quality, relationship quality, satisfaction, and switching costs have with the decision to discontinue an application development outsourcing contract . Prior to data analysis, the SPSS series mean method of replacing missing values was used in order to maximize the

data value. Responses were first classified as either continuing or discontinuation. The discontinuation group consisted of those responses indicating the respondent had either backsource or switched vendors. The continuing group included the remainder of the responses. The SPSS missing values procedure was then utilized to fill the missing values with the mean of a data series using only those responses within that particular group (continuing or discontinuation). This process provided more accurate missing values.

After completion of the missing values procedure, the data set was merged. Due to the use of logistic regression, which requires a dependent variable that is binary, responses were coded with a 0 for discontinuation and 1 if the response was for continuing of the contract. Logistic regression analysis was then executed. Table 44 displays the results.

Table 44. Logistic Regression Analysis Results

Factor	Scale	B	p-value *	Exp(B)
Post-switching costs	Switching costs	-0.329	0.206	0.719
Lost performance costs	Switching costs	1.046	0.011	2.846
Pre-switching costs	Switching costs	1.458	0.001	4.296
Sunk costs	Switching costs	1.154	0.005	3.171
Reaction of other vendors	Switching costs	-1.551	0.004	0.212
Management costs	Switching costs	1.382	0.005	3.982
Hiring costs	Switching costs	-1.474	0.007	0.229
Trust	Relationship	-2.291	0.010	0.101
Communication	Relationship	2.229	0.003	9.295
Vendor Services	Satisfaction	0.607	0.214	1.834
Timeliness	Satisfaction	1.536	0.004	4.647
Information Product	Satisfaction	-2.403	0.015	0.090
User Understanding	Satisfaction	0.943	0.067	2.568
Tangible	Service Quality	-2.234	0.006	0.107
Reliability	Service Quality	1.195	0.024	3.304
Attention	Service Quality	-0.305	0.302	0.737
Constant		-22.590	0.001	0.000
* 1-tail test				

Table 45. Logistic Regression Analysis Results for Controls

Integrated applications	-3.506	0.013	0.030
Object-oriented skills	0.468	0.127	1.596
Business process skills	1.080	0.015	2.944
Web-based skills	1.784	0.002	5.955
Financial Performance	6.193	0.002	489.097
Relative Financial Performance	-7.248	0.002	0.001
Experience	-0.160	0.006	0.852
Quality improvements	2.248	0.003	9.464
Maintenance levels	-0.720	0.034	0.487

Results generally indicate 1.) a strong relationship between switching costs and the decision to discontinue an application development contract, 2.) partial support for a relationship between satisfaction and the decision to discontinue an application development contract, 3.) partial support for the relationship between relationship quality and the decision to discontinue an application development contract, and 4.) partial support for the relationship between service quality and the decision to discontinue an application development contract.

Multicollinearity Testing

Multicollinearity is correlation among independent variables. When present, multicollinearity “makes determining the contribution of each independent variable difficult because the effects of the independent variables are ‘mixed’ or confounded due to collinearity” (Hair, Jr. J. F. et al., 1992, pp. 47). A common method of assessing multicollinearity is with the use of variance inflation factors (VIF). VIF values greater than 10 indicate high collinearity (Hair, Jr. J. F. et al., 1992). Table 46 reports the VIF

values for the controls and independent variables. None of the VIF values approach 10, thus indicating that multicollinearity is not present in the model.

Table 46. Collinearity Statistics

	Tolerance	VIF
Controls		
Financial Performance	.161	6.198
Relative Financial Performance	.162	6.191
Web-based skills	.673	1.485
Maintenance levels	.447	2.239
Object-oriented skills	.445	2.248
Experience	.835	1.197
Business process skills	.496	2.017
Integrated applications	.763	1.310
Quality improvements	.338	2.957
Independent Variables		
Post-switching costs	.566	1.765
Lost performance costs	.439	2.279
Pre-switching costs	.499	2.005
Sunk costs	.726	1.377
Reaction of other vendors	.793	1.260
Management costs	.514	1.946
Hiring costs	.476	2.103
Trust	.239	4.189
Communication	.394	2.538
Vendor Services	.324	3.087
Timeliness	.432	2.313
Information Product	.252	3.961
Knowledge & Involvement	.602	1.660
Tangible	.760	1.316
Reliability	.381	2.622
Attention	.442	2.261

ANOVA and Scheffe Test Results

Further analysis was required to complete the testing for H4_a and H4_b because logistic regression cannot be utilized to determine the relationship between switching costs and the decisions to switch or backsource separately. Therefore, ANOVA was utilized to first

verify that differences exist between the three groups (backsource, switch, and continue).

Table 28 shows the ANOVA results. Results indicate a significant difference ($\alpha = 0.05$)

between groups for all variables except Reaction of Other Vendors.

Table 47. ANOVA Results – Between Groups

	Sum of Squares	Mean Square	F	Sig.
Post-switching costs	19.770	9.885	6.314	.002
Lost performance costs	83.856	41.928	23.386	.000
Pre-switching costs	88.279	44.139	22.466	.000
Sunk costs	37.492	18.746	11.856	.000
Reaction of other vendors	6.631	3.315	2.157	.119
Management costs	41.420	20.710	8.111	.000
Hiring costs	43.634	21.817	10.171	.000

The F test in ANOVA can be used to identify if sample means are significantly different, but it cannot be used to indicate among which means the variance resides. Therefore, Scheffe's test was used to investigate all specific mean differences between groups (Hair, Jr. J. F. et al., 1992). Tables 48 displays the results from multiple comparisons between groups. It indicates responses for back sourcing and switching are not significantly different for all variables based on the level of significance reported in the last column (i.e. back sourcing and switching responses are not statistically different except in these two cases).

Table 48. Multiple Comparisons Test – Scheffe

Dependent Variable	(I) DECISION	(J) DECISION	Mean Difference (I-J)	Std. Error	Sig.
Post-switching Costs	Backsource	Switch	-.6472(+)	.27350	.064
		Continue	-.8137(*)	.23459	.003
	Switch	Backsource	.6472(+)	.27350	.064
		Continue	-.1665	.25925	.814
	Continue	Backsource	.8137(*)	.23459	.003
		Switch	.1665	.25925	.814
Lost Performance Costs	Backsource	Switch	.1240	.29267	.914
		Continue	-1.4437(*)	.25104	.000
	Switch	Backsource	-.1240	.29267	.914
		Continue	-1.5678(*)	.27743	.000
	Continue	Backsource	1.4437(*)	.25104	.000
		Switch	1.5678(*)	.27743	.000
Pre-Switching Costs	Backsource	Switch	-.4869	.30638	.286
		Continue	-1.6975(*)	.26280	.000
	Switch	Backsource	.4869	.30638	.286
		Continue	-1.2107(*)	.29042	.000
	Continue	Backsource	1.6975(*)	.26280	.000
		Switch	1.2107(*)	.29042	.000
Sunk Costs	Backsource	Switch	.0674	.27486	.970
		Continue	-.9725(*)	.23576	.000
	Switch	Backsource	-.0674	.27486	.970
		Continue	-1.0399(*)	.26054	.001
	Continue	Backsource	.9725(*)	.23576	.000
		Switch	1.0399(*)	.26054	.001
Reaction of Other Vendors	Backsource	Switch	.4757	.27101	.218
		Continue	-.0261	.23246	.994
	Switch	Backsource	-.4757	.27101	.218
		Continue	-.5018	.25689	.152
	Continue	Backsource	.0261	.23246	.994
		Switch	.5018	.25689	.152
Management Costs	Backsource	Switch	-.3105	.34927	.674
		Continue	-1.1572(*)	.29958	.001
	Switch	Backsource	.3105	.34927	.674
		Continue	-.8467(*)	.33107	.041
	Continue	Backsource	1.1572(*)	.29958	.001
		Switch	.8467(*)	.33107	.041
Hiring Costs	Backsource	Switch	.1619	.32014	.880
		Continue	-1.0064(*)	.27460	.002
	Switch	Backsource	-.1619	.32014	.880
		Continue	-1.1683(*)	.30346	.001
	Continue	Backsource	1.0064(*)	.27460	.002
		Switch	1.1683(*)	.30346	.001

* The mean difference is significant at the .05 level.

+ The mean difference is significant at the .10 level.

Table 48 also indicates that continuing responses for the switching cost factors are significantly different from backsourcing responses for all factors except Reaction of Other Vendors. Continuation responses are significantly different for all switching responses for all factors except Post-switching Costs and Reaction of Other Vendors.

Homogeneous subset analysis using Scheffe's test further validated the outcomes from the multiple comparison test. Tables 49-55 show these results. Switching cost factor scores from the backsourcing and switching groups were not significantly different from each other, while being significantly different from the continuation responses for Pre-Switching Costs, Sunk Costs, Lost Performance Costs, Hiring Costs, and Management Costs. Investigating Post-switching Costs (Table 53) indicates that backsourcing responses are significantly different than the switching and continuation responses. The Reaction of Other Vendors table (Table 55) indicates that no significant difference exists between responses from any of the three groups.

Table 49. Scheffe's Test Results
Pre-switching Costs

DECISION	Subset for alpha = .05	
	1	2
Backsource	2.5765	
Switch	3.0634	
Continue		4.2740
Significance	.241	1.000

Table 50. Scheffe's Test Results
Sunk Costs

DECISION	Subset for alpha = .05	
	1	2
Switch	4.4095	
Backsource	4.4769	
Continue		5.4494
Significance	.966	1.000

Table 51. Scheffe's Test Results
Lost Performance Costs

DECISION	Subset for alpha = .05	
	1	2
Switch	2.7284	
Backsource	2.8525	
Continue		4.2962
Significance	.903	1.000

Table 52. Scheffe's Test Results
Hiring Costs

DECISION	Subset for alpha = .05	
	1	2
Switch	2.3675	
Backsource	2.5294	
Continue		3.5358
Significance	.865	1.000

Table 53. Scheffe's Test Results
Post-switching Costs

DECISION	Subset for alpha = .05	
	1	2
Backsource	3.1274	
Switch		3.7746
Continue		3.9412
Significance	1.000	.810

Table 54. Scheffe's Test Results
Management Costs

DECISION	Subset for alpha = .05	
	1	2
Backsource	2.9990	
Switch	3.3096	
Continue		4.1563
Significance	.638	1.000

Table 55. Scheffe's Test Results
Reaction of Other Vendors

DECISION	Subset for alpha = .05	
	1	
Switch		2.5254
Backsource		3.0011
Continue		3.0273
Significance		.146

Hypotheses Evaluation

Results from the logistic regression, ANOVA, and Scheffe's analysis provide the necessary information to evaluate the study hypotheses. The hypotheses are presented with supporting evidence.

Service Quality and Discontinuation an Application Development Contract

H1: Service quality is negatively associated with the decision to discontinue an application development outsourcing contract.

Partial support for H₁ was found. Service quality coefficient levels of significance were 0.006, 0.024, and 0.302 for Tangible, Reliability, and Attention respectively. The

Reliability coefficient value of 1.195, combined with its significance, provides the partial support for the hypothesis that service quality is negatively associated with the decision to discontinue an application development outsourcing contract. Grover et, al. (1996) previously found a direct effect of service quality, measured only with Tangible and Reliability items from SERVQUAL, on application development and maintenance outsourcing success. The results from the current research differs slightly from Grover, et al, but is not unexpected since a different sample was used. Grover et, al. used the two-column format of SERVQUAL as opposed to the perceptions-only scale in the current study, and the Grover et, al. dependent variable was a nine-item Likert-type scale that focused on the benefits attained from outsourcing. They even conclude that an adaptation of their study “could yield different results (Grover, Cheon, and Teng 1996, pp. 110),” which was seen in the current research.

Satisfaction and Discontinuation an Application Development Contract

H2: Satisfaction is negatively associated with the decision to discontinue an application development outsourcing contract.

Satisfaction was found to be partially associated with the decision to discontinue an application development outsourcing contract. Satisfaction coefficient levels of significance were 0.214, 0.004, 0.015, and 0.067 for Vendor Service, Timeliness, Information Product, and User Understanding respectively. Based on the coefficient and p-values, only the Timeliness and Knowledge and Involvement dimensions were found to be significant. The Timeliness coefficient showed a 1.536 value, indicating that as the staff took longer to process change requests, organizations are more likely to bring

application development back in-house or switch it to another vendor. The .943 coefficient for User Understanding indicates that as the users' understanding of the system increases, they are more likely to continue with the contract. Thus, the results of this study partially support the hypothesis that satisfaction is negatively associated with the decision to discontinue an application development outsourcing contract.

Relationship Quality and Discontinuation an Application Development Contract

H3: Relationship quality is negatively associated with the decision to discontinue an application development outsourcing contract.

Relationship quality was found to be partially associated with the decision to discontinue an application development outsourcing contract. Communication was found to support the hypothesis at the 0.05 level. As communication decreases between the vendor and client, the likelihood of the contract being discontinued increases. Thus, the results of this study provide partial support for the hypothesis that relationship quality is negatively associated with the decision to discontinue an application development outsourcing contract. Communication is significantly and positively related to the decision to discontinue.

Switching Costs and Discontinuation an Application Development Contract

H₄: Switching costs are negatively associated with the decision to discontinue an application development outsourcing contract.

Partial support for H₄ was found with results from the logistic regression. Four switching cost factors were statistically significant at the $\alpha=0.05$ level and provide support for the hypothesis. Those factors include Lost Performance costs, Pre-switching costs, Sunk costs, and Management costs. Each of these factors were negatively related to the decision to discontinue an application development outsourcing contract. The Lost Performance costs coefficient was 1.046, with a 0.011 level of significance, while the Pre-switching costs coefficient was 1.458 and had a 0.001 level of significance. The Sunk costs and Management costs coefficients were 1.154 and 1.382, while their levels of significance were both 0.005. Thus four factors exist to provide support for H₄.

The significance of the Pre-switching Cost factor indicates that as the costs associated with preparing to switch to another vendor or in-house development increase, organizations are less likely to discontinue the relationship. Likewise, as sunk costs increase the likelihood of discontinuation an outsourcing relationship decreases. Sunk costs can include time, money, and other resources devoted to the outsourcing relationship. Lost Performance costs are the third category of costs associated with the decision to discontinue. Lost Performance costs include the privileges, benefits, and preferential treatment the client would lose after switching to another application development source. The last group of switching costs that are significant are the Management Costs. These costs are the result establishing or modifying a management system after discontinuation a contract.

Four significant switching costs were found to be negatively related to the decision to discontinue an application development outsourcing contract. The results suggest that as

costs associated with the decision to discontinue an application development outsourcing contract increase, the likelihood of discontinuation decreases. Thus, even in cases where satisfaction with a relationship may be low, the client may stay in the relationship due to high switching costs (Porter, 1980; Willcocks and Lacity 1995) or high relationship termination costs (Morgan and Hunt 1994).

H4a: Switching costs are negatively associated with the decision to backsource an application development outsourcing contract.

H4b: Switching costs are negatively associated with the decision to switch vendors in an application development outsourcing contract.

Hypotheses H4_a and H4_b are both partially supported. Logistic regression suggests a relationship between four factors of switching costs and the decision to discontinue an application development outsourcing contract. In order to test for the relationship specifically between switching costs and the decision to a.) backsource and b.) switch, additional analyses must be performed. An ANOVA (Table 26) was employed to identify the presence of a significant difference between three groups of respondents (backsourcing, switching, and continuing). Of the four switching costs that support H4, all are significantly different across the responses from the three groups.

A multiple comparison test and homogenous subset analysis using Scheffe's test were performed next. Results indicate that for the switching costs factors that were found to be supportive of H4 using logistic regression (Lost Performance costs, Pre-switching costs, Sunk costs, and Management costs), all contained statistically insignificant differences in

the scores between the mean switching and mean backsourcing responses. Thus, support for H_{4a} and H_{4b} begins with the significance initially shown in the logistic regression analysis. Since Scheffe's test concludes that response means are not statistically significant between clients that practice backsourcing and switching, Lost Performance costs, Pre-switching costs, Sunk costs, and Management costs are significantly related to the decision to backsource and switch.

Summary of Results

Partial support was found for Hypotheses 1, 2, 3, and 4. These results indicate that service quality, satisfaction, relationship quality, and switching costs do have an impact upon organizations' decisions to discontinue an application development outsourcing contract. In particular, communication, timeliness, pre-switching costs, sunk costs, lost performance costs, management costs, knowledge and involvement, and reliability are the most influential factors influencing the application development sourcing decision based the data analysis performed.

Figure 13. Logistic Regression Results

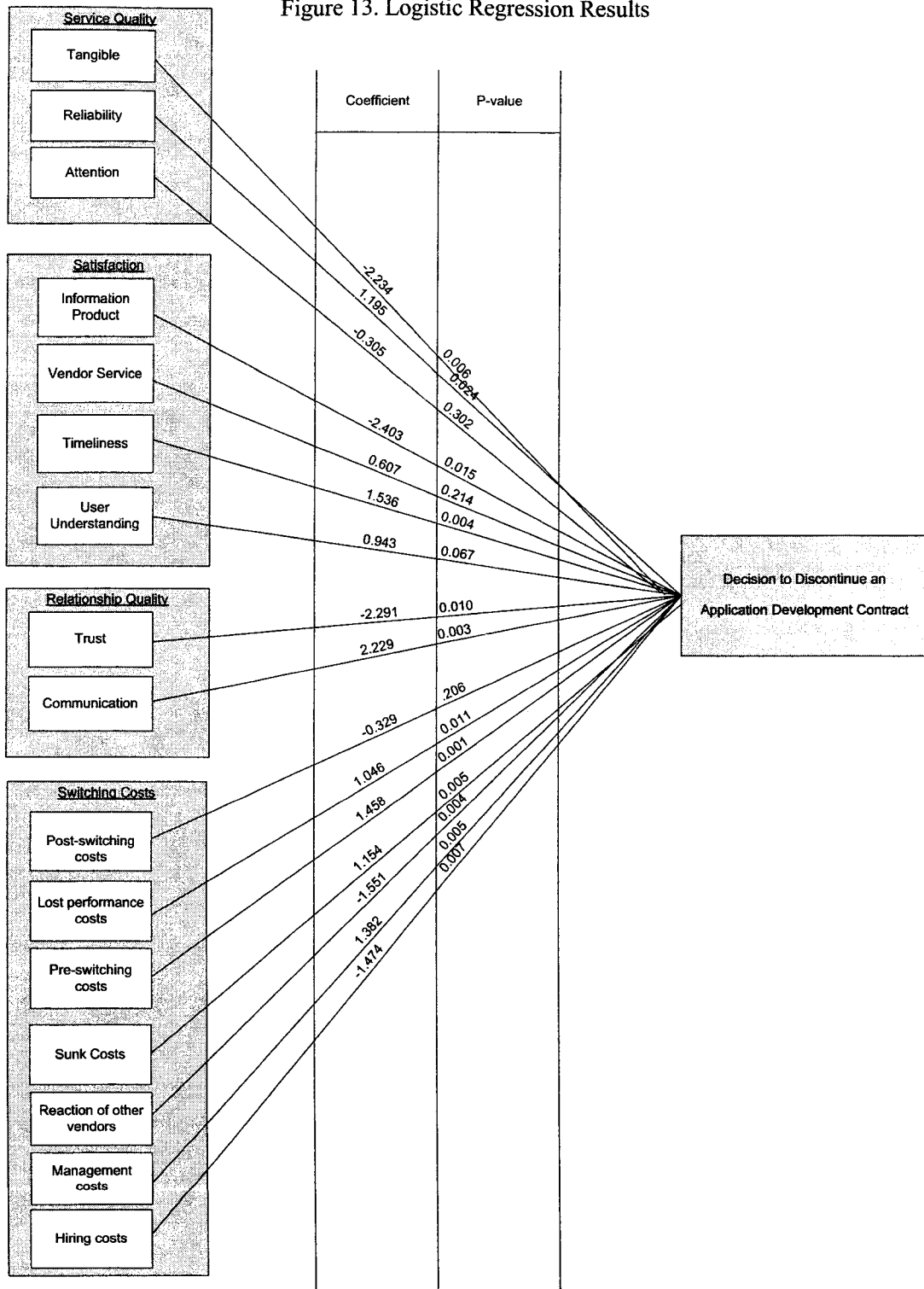
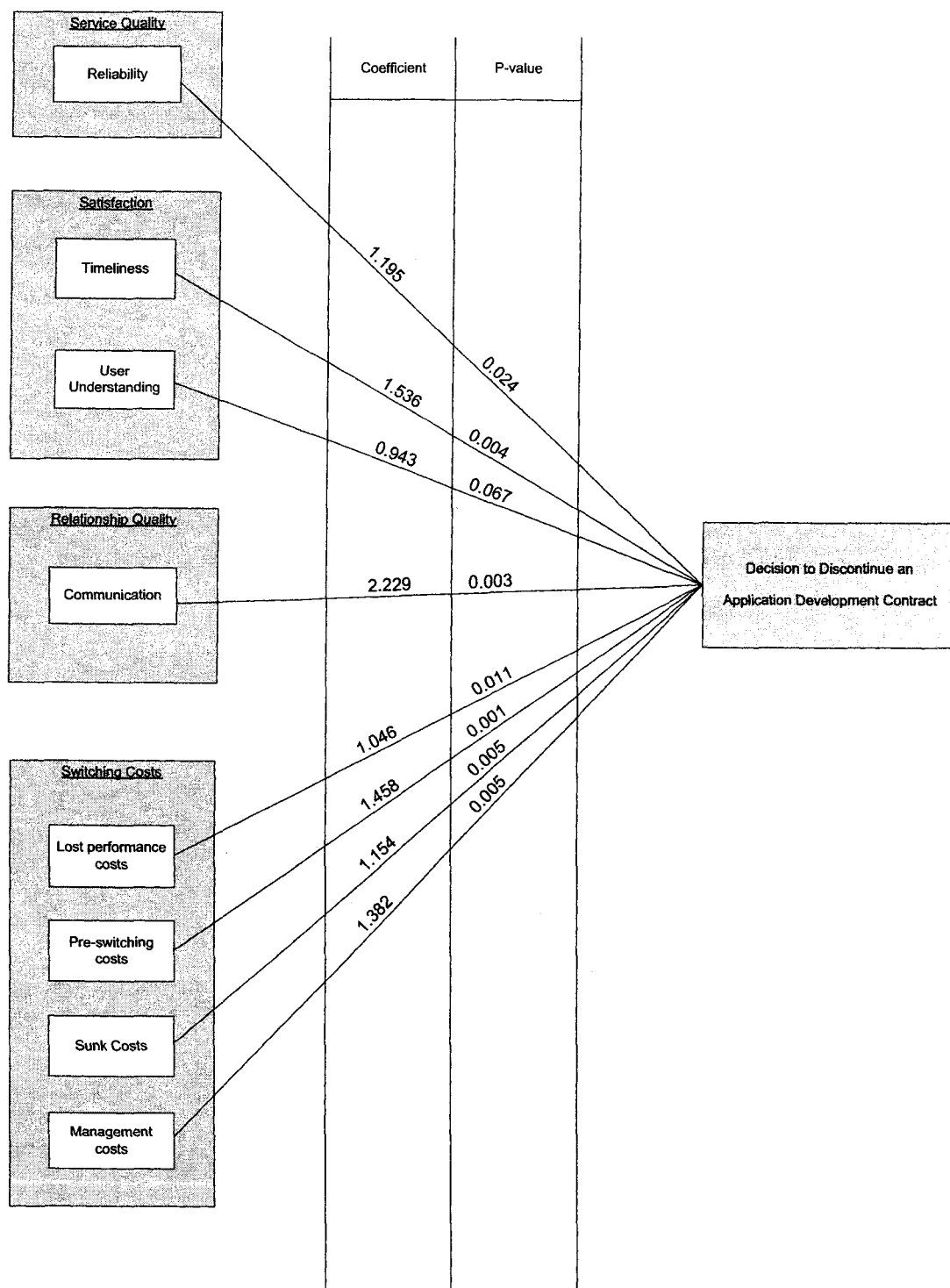


Figure 14. Final Model



CHAPTER 5

CONCLUSIONS

After careful analysis of the data, an overview of the findings is presented. Next, a discussion of the implications of the findings for client and vendor organization members responsible for making decisions related to application development outsourcing will be provided. A discussion of the academic and practitioner contributions will follow, along with a discussion of the strengths and limitations of the study. Finally, future research directions resulting from the study will be offered.

Overview of Research Findings

Service quality, satisfaction, relationship quality, and switching costs were found to be important factors relating to application development outsourcing failure. The findings indicate that one service quality factor, one satisfaction factor, one relationship quality factor, and four of the switching cost factors are significantly related to the application development outsourcing decision.

Service quality was found to be associated with the decision to discontinue an application development outsourcing contract. Of the service quality dimensions investigated, the reliability of the outsourcing vendor was found to be negatively related to the decision to

discontinue an application development outsourcing contract. The items measuring reliability are specifically related to completing tasks when promised, the vendor showing a sincere interest in the client, and the dependability of the vendor.

Partial support was found for the relationship between relationship quality and the decision to discontinue an application development outsourcing contract. Of the five dimensions of relationship quality investigated, communication was the only dimension that supported the hypothesis. Results indicate that as communication increases, the likelihood of discontinuing a contract decreases.

Partial support was found for the relationship between satisfaction and the decision to discontinue an application development outsourcing contract. Vendor service, the information product, and knowledge and involvement were not found to be significantly related to the decision to discontinue. Timeliness, which measures the time required for change requests, was found to be significantly and negatively related to the decision to discontinue an application development outsourcing contract.

Four of the nine switching cost dimensions were found to be statistically significant. These include lost performance costs, pre-switching, sunk, and management costs. Each of the four dimensions were found to be negatively related to the decision to discontinue an application development outsourcing contract. Further analysis using Scheffe's post hoc t-test indicated that lost performance, pre-switching, sunk, and management costs were significantly related to the decision to backsource and switch.

Overall, poor communication, lack of timeliness, low user understanding, low reliability, high lost performance costs, high pre-switching costs, high sunk costs, and high management costs are significantly related to the decision to discontinue an application development outsourcing contract. These factors span across the constructs of service quality, satisfaction, relationship quality, and switching costs.

Academic Contributions of the Study

This paper focuses on application development outsourcing contract failures. Little academic research has been done in this area, and none utilizing relationship quality, service quality, satisfaction, and switching costs collectively. The paper also specifically investigates backsourcing and switching. The call by Lacity and Willcocks (2001) for an initial investigation of backsourcing provided the impetus for this study. To date, backsourcing research is limited in the literature. This study therefore provides an initial investigation into backsourcing. Additionally, the simultaneous investigation of switching vendors is an area that has received little attention in the literature as well.

Research in the information systems outsourcing literature has typically been approached from a qualitative perspective. This quantitative study creates a quantitative supplement to the existing qualitative research.

Despite the significance of switching costs found in the current study, very little empirical evidence have been found in the literature related to switching costs in IT (Pei-Yu (Sharon) Chen and Hitt 2002). This study is one of the first to investigate switching costs as they relate to IT outsourcing. Switching costs were indeed found to be highly

significant in the decision to backsource or switch and four switching costs in particular were identified that were negatively associated with the decision to discontinue an application development outsourcing contract.

Practitioner Contributions of the Study

For the practitioner, this study provides quantitative evidence as to the importance outsourcing clients place on relationship quality, service quality, satisfaction, and switching costs. Although not all dimensions of these constructs were found to be significantly related to outsourcing success or failure, they were each statistically analyzed. Contributions of the research pertinent to practitioners follows.

Communication is a relationship-oriented dimension of the outsourcing relationship that deserves attention. Due to the significant relationship of communication with the outsourcing decision, application development outsourcing vendors should be aware of the quality of the communication with the clients. Good communication, in particular communication that is timely, accurate, complete, and credible helps create a better relationship atmosphere. These aspects of communication were collectively found to be negatively associated with the decision to discontinue an application development outsourcing contract.

Clients also appear to be cognizant of the speed at which change requests are processed. As change requests are processed in a more timely manner, the negative association with the decision to discontinue an outsourcing contract becomes significant. Thus, vendors

should consider the processes through which change requests are made to ensure that the changes are made in a timely manner.

User understanding of the system should be sufficient and complete. Although the scope of this study does not include the antecedents of user understanding, it has been found in previous research that involvement in the development process and training can increase the understanding of the systems (Ives, Olson, and Baroudi 1983).

Reliability is shown to be important as well. Vendors should learn to complete tasks when promised, be dependable, and insist on error-free records. Collectively, these aspects of reliability compose a dimension of service quality which is negatively associated with the decision to discontinue an application development outsourcing contract.

Switching costs were found to be related to the application development outsourcing decision. In particular, lost performance, pre-switching, sunk, and management costs were all found to be significantly and negatively related to the decision to discontinue an application development outsourcing contract. A brief discuss of each follows.

In general, pre-switching costs are those costs associated with searching for a new outsourcing vendor or employees. The increase in pre-switching costs is positively related to outsourcing success. Thus, as these costs increase, the client is more likely to stay with the existing outsourcing vendor.

Sunk costs include the time, energy, effort, and money invested in the current relationship. These costs, since already incurred, cannot be used towards a new relationship. Results indicate that as sunk costs increase, the likelihood of clients maintaining their current vendor increase as well.

Lost performance costs are those costs incurred as the result of discontinuing service with a vendor. Continued patronage of a particular service provider can afford certain benefits that can only accrue over time (Maute and Forrester 1993; Reynolds & Beatty, 1999). Specifically, these costs include certain benefits, privileges, and preferential treatment. It is recommended that outsourcing vendors communicate these benefits of continuing to the clients in order to increase customer retention.

Management costs are the fourth significant dimension of switching costs that are related to the outsourcing decision. Management costs are those costs that may arise due to creating a new or revising an existing management structure to govern the services backsource or switched to a new vendor. This study suggests that clients should maintain a certain level of expertise in-house, in regards to both employees and management staff, such that management costs may be minimized in the event of a discontinued contract.

Overall, switching costs are related to the outsourcing decision. Consequently, clients are inclined to stay with the current vendor when the switching costs increase. In general, clients should be aware of this relationship and maintain awareness of the level of switching costs. Perhaps clients can attempt to minimize switching costs and thus

maintain a certain level of flexibility with regards to the ability to discontinue an outsourcing relationship.

Limitations of the Study

While efforts were made to minimize the limitations of this study, some limitations should be noted. Relationships among the switching costs and relationship quality, service quality, and satisfaction was not explored at this time. The possibility exists that the impact of switching costs on the decision to discontinue an application development outsourcing contract could be partially influenced by relationship quality, service quality, and satisfaction. An investigation of interaction among these variables might prove useful. In fact, past research has indicated that even in cases where satisfaction with a relationship may be low, the client may stay in the relationship (Porter, 1980b) due to high switching costs, i.e., high psychological and economic costs (Porter, 1980a; Willcocks and Lacity 1995) or high relationship termination costs (Morgan and Hunt 1994).

Another concern is related to the attractiveness of alternative sources of service. The relationship between switching costs and the decision to discontinue may be influenced by the availability of alternatives. For example, switching costs may be low in a given situation but due to the lack of alternatives, organizations may maintain their existing relationship with the current vendor.

A third limitation is that generalizability of the results across different types of IT outsourcing is not recommended. This study evaluated the relationship service quality, relationship quality, satisfaction, and switching costs has with application development

outsourcing contracts. Only, it is not recommended to generalize the study findings to other types of outsourcing, even within IT.

Strengths of the Study

The first strength of the study is the diversity of the respondent base across multiple industries. More than fourteen industries were represented. By focusing on a broad range of industries, an understanding of the relationships was obtained that could have been limited had only one industry been represented.

A second strength of the paper is that it provides a solid theoretical base for future IT outsourcing research since the theories utilized may be applied in other settings as well. For example, Grover, Cheon, and Teng (1996) classify IS functions into five categories, application development and maintenance, systems operations, telecommunications and networks management, end-user support, and systems planning and management. The theoretical foundation utilized in the current research can thus be applied to these other four IS functions.

Directions for Future Research

The results of the current research, while positive, are just a beginning for future research in the area of IT outsourcing failure. Application development outsourcing was selected because it has a relatively long history in IT outsourcing and is still fairly common. As mentioned previously, other fruitful research applications within IT outsourcing include systems operations, telecommunications and networks management, end-user support, and systems planning and management (Grover, Cheon, and Teng, 1996).

Generalizations cannot be made from current results due to the fact that only application development was investigated. Therefore, broader impacts need to be further researched in other areas. The other four categories provided by Grover, Cheon, and Teng (1996) may still provide a fruitful area of research.

The current research begins an attempt to begin to understand IT outsourcing failure. It is hoped that what is learned in the current research can be applied and improved upon in future research. It can be seen from the current results that certain aspects of service quality, satisfaction, relationship quality, and switching costs have an impact upon the outsourcing decision. Out of the seeds of the current research a new conceptual model will be created that should assist in explaining more of the IT outsourcing failure phenomenon.

The new model, while not diverging far from the current model, will add at least two components. These components include availability of alternative sources and product quality. Each of these components may add explanatory power to the overall model.

An additional deviation from the current model will include an investigation of the moderating effects of switching costs on service quality, relationship quality and satisfaction. It is posited that switching costs and availability of alternative sources may both moderate the relationships of the other constructs with the outsourcing decision.

It seems intuitive that as fewer alternatives exist, clients are more inclined to remain with the current outsourcing vendor. In a similar way, switching costs may become so high

that clients are more inclined to remain with the current outsourcing vendor because it costs too much to switch to another source.

Product quality should be added. It will compliment the service quality measurement that is already included in the model. Product and service quality combined should capture much of the relationship impact between the vendor and the client.

The significant, but counter-theoretical coefficient signs for reaction of other vendors, hiring costs, trust, and information product are interesting. The coefficients for each of these variables are negative, although theoretically they should be positive. For example, the negative trust coefficient indicates that high trust is associated with the discontinuation of a contract. An explanation for this result is not easily found.

Possible reasons for the counter-theoretical results could include measurement problems or the possible effects of moderation. In addition, multicollinearity could cause the counter-theoretical results, although the variance inflation factor scores indicate that multicollinearity is not a problem.

Future research in this area should consider the potential for measurement problems, moderation, assessment of controls, and multicollinearity. Additional measurement scales could be evaluated to lessen the effects of measurement problems. A revised model that incorporates the moderating effects of switching costs is also suggested.

Summary

As seen by the relationship of communication with outsourcing success and failure, relationship quality is important in application development outsourcing agreements. Timeliness was determined to have a strong relationship with outsourcing failure, although other measured aspects of satisfaction were insignificant. Service quality was found to be related to the outsourcing decision as seen with the significance of reliability. Four switching costs were shown to be significantly related to the outsourcing decision; lost performance, pre-switching, sunk, and management costs. In conclusion, client companies purchasing application development outsourcing services from outsourcing vendors should be aware of the relationship that relationships service quality, satisfaction, relationship quality, and switching costs have on the decision to continue or discontinue with the existing outsourcing vendor.

APPENDIX
COVER LETTERS AND SURVEY INSTRUMENTS

Phase 1 - Cover Letter

<date>

<name>
<address>
<address>
<address>

Dear Ms./Mr. Lastname:

As an **information systems** researcher and former systems analyst, I am greatly interested in identifying ways to increase the success rate of application development outsourcing contracts. I am presently conducting a nationwide study of Information Technology (IT) professionals like you to determine what influences and impacts outsourcing success. I would greatly appreciate your assistance in this regard.

Through your knowledge, opinions, and insights related to application development outsourcing contracts, I hope to identify the critical factors that cause firms to continue with their existing contracts or, alternatively, to switch to a different outsourcing vendor or bring the application development back in-house. Our goal is to learn from your experience.

With your approval, I would like to send you a short survey related to application development outsourcing contracts. To make the process convenient, the survey will be accompanied with a postage-paid, return envelope.

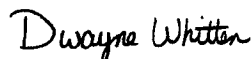
Please take a few seconds to complete the enclosed postage-paid postcard to let me know of your willingness to contribute to this important research project. Please note that I ask for your name and address for mailing purposes only. When you return the survey to me, please do not put your name on it. Neither your completed survey nor your envelope will be able to be distinguished from others; your responses will be combined with those of other randomly selected IT professionals' responses. Thus, **your anonymity is guaranteed**.

As a token of my sincere thanks for completing the survey, I would like to send you an Executive Summary of the results of the study. You should find it interesting, informative, and helpful to your practice. To request a copy of the Executive Summary and to preserve your anonymity, feel free to drop your card in a separate envelope or just email me at dwayne_whitten@baylor.edu.

I know how valuable your time is but hope that you will take a few minutes from your busy schedule to check "yes" on the postcard and later complete the survey I send you. I unfortunately can afford to contact only a limited number of IT professionals. Thus, your cooperation is *vital* to my study.

If you have any questions about the survey, please feel free to contact me at (254) 710-6106. Thank you in advance for your assistance. It is greatly appreciated.

Sincerely,



Dwayne Whitten
Assistant Professor, Information Systems

P.S. Even if you feel that the survey does not apply to you, *please* respond. Just let me know this by checking the last box in Question 2 on the reply postcard (or via email if you prefer). I will then be able to contact another IT professional.

Phase 1 - Cover Letter For Backsourcing Instrument

<date>

<name>
<address>
<address>
<address>

Dear Ms./Mr. Lastname:

You recently returned a postcard to me indicating your willingness to participate in my research project. I want to thank you for agreeing to be a part of this important national study.

Through your knowledge, opinions, and experiences related to application development outsourcing contracts, I hope to identify the critical factors that cause firms to bring the application development back in-house (i.e., backsourcing). My goal is to learn from your insights.

I know how valuable your time is, but please take about 15 minutes to complete the enclosed survey. I unfortunately can afford to send out only a limited number of surveys. Your response counts -- it is *critical* to my study.

When you complete the survey, please think back to the most recent application development outsourcing contract that your firm backsourced. Please answer the survey questions with regard to that particular contract.

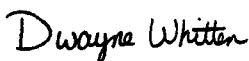
Your name appeared in a random sample of IT executives from firms around the nation. However, I ask you not to put your name on the survey. Thus, neither your completed survey nor your envelope will be able to be distinguished from others. Your responses will then be combined with those of other randomly selected IT professionals' responses. **Your anonymity is guaranteed.**

As a token of my sincere thanks for completing the survey, I would like to send you an Executive Summary of the results of the study. You should find it interesting, informative, and helpful to your practice. To request a copy of the Executive Summary and to preserve your anonymity, feel free to drop your card in a separate envelope or just email me at: dwayne_whitten@baylor.edu if you have not already done so.

I hope that you can take a few minutes from your busy schedule, complete the survey, and return it to me at your soonest convenience. To make the process convenient, I have enclosed a postage-paid reply envelope.

If you have any questions about the survey, please feel free to contact me at (254) 710-6106. Thank you in advance for your assistance. Your cooperation is *vital* to my study and is greatly appreciated.

Sincerely,



Dwayne Whitten
Assistant Professor, Information Systems

P.S. If you feel that the survey does not apply to you, *please* let me know this either in a note placed in the reply envelope or via email. I will then be able to contact another IT professional.

Phase 1 - Cover Letter For Switching Instrument

<date>

<name>
<address>
<address>
<address>

Dear Ms./Mr. Lastname:

You recently returned a postcard to me indicating your willingness to participate in my research project. I want to thank you for agreeing to be a part of this important national study.

Through your knowledge, opinions, and experiences related to application development outsourcing contracts, I hope to identify the critical factors that cause firms to switch from one application development outsourcing vendor to another (i.e., switching). My goal is to learn from your insights.

I know how valuable your time is, but please take about 15 minutes to complete the enclosed survey. I unfortunately can afford to send out only a limited number of surveys. Your response counts -- it is *critical* to my study.

When you complete the survey, please think back to the most recent application development outsourcing contract that your firm switched to another vendor. Please answer the survey questions with regard to that particular contract.

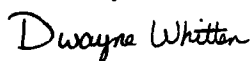
Your name appeared in a random sample of IT executives from firms around the nation. However, I ask you not to put your name on the survey. Thus, neither your completed survey nor your envelope will be able to be distinguished from others. Your responses will then be combined with those of other randomly selected IT professionals' responses. **Your anonymity is guaranteed.**

As a token of my sincere thanks for completing the survey, I would like to send you an Executive Summary of the results of the study. You should find it interesting, informative, and helpful to your practice. To request a copy of the Executive Summary and to preserve your anonymity, feel free to drop your card in a separate envelope or just email me at: dwayne_whitten@baylor.edu if you have not already done so.

I hope that you can take a few minutes from your busy schedule, complete the survey, and return it to me at your soonest convenience. To make the process convenient, I have enclosed a postage-paid reply envelope.

If you have any questions about the survey, please feel free to contact me at (254) 710-6106. Thank you in advance for your assistance. Your cooperation is *vital* to my study and is greatly appreciated.

Sincerely,



Dwayne Whitten
Assistant Professor, Information Systems

P.S. If you feel that the survey does not apply to you, *please* let me know this either in a note placed in the reply envelope or via email. I will then be able to contact another IT professional.

Phase 1 Cover Letter For Continuation Instrument

<date>

<name>
 <address>
 <address>
 <address>

Dear Ms./Mr. Lastname:

You recently returned a postcard to me indicating your willingness to participate in my research project. I want to thank you for agreeing to be a part of this important national study.

Through your knowledge, opinions, and experiences related to application development outsourcing contracts, I hope to identify the critical factors that cause firms to continue an application development outsourcing contract. My goal is to learn from your insights.

I know how valuable your time is, but please take about 15 minutes to complete the enclosed survey. I unfortunately can afford to send out only a limited number of surveys. Your response counts -- it is *critical* to my study.

When you complete the survey, please think back to the most recent application development outsourcing contract that your firm has continued. Please answer the survey questions with regard to that particular contract.

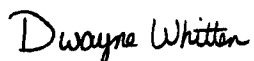
Your name appeared in a random sample of IT executives from firms around the nation. However, I ask you not to put your name on the survey. Thus, neither your completed survey nor your envelope will be able to be distinguished from others. Your responses will then be combined with those of other randomly selected IT professionals' responses. **Your anonymity is guaranteed.**

As a token of my sincere thanks for completing the survey, I would like to send you an Executive Summary of the results of the study. You should find it interesting, informative, and helpful to your practice. To request a copy of the Executive Summary and to preserve your anonymity, feel free to drop your card in a separate envelope or just email me at: dwayne_whitten@baylor.edu if you have not already done so.

I hope that you can take a few minutes from your busy schedule, complete the survey, and return it to me at your soonest convenience. To make the process convenient, I have enclosed a postage-paid reply envelope.

If you have any questions about the survey, please feel free to contact me at (254) 710-6106. Thank you in advance for your assistance. Your cooperation is *vital* to my study and is greatly appreciated.

Sincerely,



Dwayne Whitten
 Assistant Professor, Information Systems

P.S. If you feel that the survey does not apply to you, *please* let me know this either in a note placed in the reply envelope or via email. I will then be able to contact another IT professional.

Phase 2 - Cover Letter

<date>

<name>
 <address>
 <address>
 <address>

Dear Ms./Mr. Lastname:

I am a doctoral student in Information Systems and former systems analyst conducting a nationwide survey of Information Technology (IT) professionals like yourself. I would greatly appreciate your assistance with my dissertation by learning from your insights. My objective is to learn from your opinions and experiences about factors related to application development outsourcing contracts. The study hopes to identify factors that lead to firms either switching to a different outsourcing vendor or bringing the application development function back in-house.

I know how valuable your time is, but please take about 15 minutes to complete an enclosed questionnaire. I unfortunately can afford to send out only a limited number of questionnaires. Your response counts -- it is *critical* to my study.

Enclosed you will find three questionnaires, but **I do not ask you to complete all three**. The first is related to bringing the application development back in-house (backsourcing), Questionnaire A. The second, Questionnaire B, is related to switching to another vendor. My main objective is to obtain information related to backsourcing or switching, so please complete one or both of those questionnaires if you have experience with backsourcing or switching vendors.

If you do not have experience with backsourcing or switching but do have experience with the continuation of a contract, please complete Questionnaire C for continuation. Please complete at least one questionnaire if you have the time and appropriate experience. I would greatly appreciate your completing more than one questionnaire. If you have no experience with outsourcing application development, please return Form D (not participating), which is very important for obtaining my dissertation committee's approval of my work.

To make the process convenient, I have enclosed a postage-paid reply envelope. Please return at least one of the four enclosures: (1) Questionnaire A for backsourcing, (2) Questionnaire B for switching vendors, (3) Questionnaire C for continuing with the same vendor, or (4) Form D confirming receipt of this mailing but not participating. **Your anonymity is guaranteed**. Neither your questionnaire nor your envelope can be distinguished from others; your responses will be combined with others and only composite results will be produced.

As a token of my thanks, I would be glad to send you an Executive Summary of the results of this survey. You should find it interesting, informative, and helpful to your practice. Simply enclose your business card with your survey or, to preserve your anonymity, drop your card in a separate envelope (or just email me at Dwayne_Whitten@baylor.edu). If you have any questions about the survey, please feel free to contact me at (254) 710-6106 or my project advisor, Dr. Charlotte Stephens, at (318) 257-3514 (cstephens@cab.Latech.edu).

I hope that you can take a few minutes from your busy schedule, complete the questionnaire(s) or form, and return in the postage-paid reply envelope to me at your soonest convenience. Your cooperation is *vital* to my study. Thank you in advance for your assistance. It is greatly appreciated.

Sincerely,

Dwayne Whitten

Dwayne Whitten, Doctoral Candidate

Phase 1 – Postcard

Please take a minute to answer the two questions below, complete your name and address, and drop this postage-paid card in the mail. Thank you in advance for your help. Your assistance is greatly appreciated!

Please think back to the application development outsourcing contracts you have been involved with in the last three years. Please answer the following two questions related to these contracts:

1. Of the application development contracts you recall, please check *all* of the boxes below that apply to these contracts. The application development was . . .
 - switched to another vendor
 - brought back in-house (i.e., back-sourced)
 - continued with the same vendor
 - other (please explain) _____
2. Would you be willing to answer an **anonymous** survey regarding contracts like these?
 - Yes, I would be willing to share my experience, insights, and knowledge.
(An Executive Summary of the study results will be sent to all interested participants)
 - No, I am not willing to participate in this study.
 - No, unfortunately this study does not apply to me.

Name: _____

Address: _____
Street or box number City State Zip

***** Thank you for your time and consideration. *****

Form D – Not Participating

If you will not be participating in this study, please complete this form . . .

Please take a minute to check one of the boxes below, complete your name and address, and return it to me using the enclosed postage-paid return envelope. Thank you in advance for your help. Your assistance is greatly appreciated, as the number of responses I obtain is critical.

- No, I am not willing to participate in this study.
- No, unfortunately this study does not apply to me.

Name

Company

Street or box number

City

State

Zip

***** Thank you for your time and consideration. *****

IT Application Development Outsourcing Survey

QUESTIONNAIRE A - BACKSOURCING

We are conducting research on application development outsourcing. Please take a few minutes to complete this survey. Your input is very important to us.

- Please do not put your name on this questionnaire. All information that you provide will be anonymous.
- Note: there are no right or wrong answers – just your perceptions and insights about your outsourcing experiences.
- Your participation in this important study is greatly appreciated. We thank you in advance for your input.

For the purposes of this survey, please think back to the most recent application development outsourcing contract that resulted in a decision to bring the application development and maintenance back in-house (i.e. backsourcing). Please answer the questions with regard to that particular contract.

Section A. Below are questions regarding general aspects of the outsourcing decision. Please respond to these general questions and then to more specific questions regarding the (1) outsourcing contract, (2) the application outsourced, and (3) impact of outsourcing.

General Questions

1. Please indicate the level of strategic importance of the outsourced system, that is, the degree to which the application(s) increased the competitiveness of your firm.	Low 1 0 2 0 3 0 4 0 5 0 6 0 7 0 High
2. Our organization outsourced application development for this contract because the development could not be done in a timely manner in-house.	Strongly Disagree Neither Agree Nor Disagree Strongly Agree 1 0 2 0 3 0 4 0 5 0 6 0 7 0
3. In-house application development staff had little or no experience with the type of application outsourced.	1 0 2 0 3 0 4 0 5 0 6 0 7 0
4. The contract was tight, (i.e., included clauses related to things such as service levels, dispute resolution procedures, etc).	1 0 2 0 3 0 4 0 5 0 6 0 7 0
5. "Hidden costs," or costs resulting from services paid for outside of the contract, were high.	1 0 2 0 3 0 4 0 5 0 6 0 7 0

Rate each of the following with regard to the skills and abilities of the previous application development outsourcing vendor.

The outsourcing vendor had the skills required to . . .	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
6. . . . build friendly interfaces for legacy systems.	1 0 2 0 3 0 4 0 5 0 6 0 7 0		
7. . . . develop successful object oriented applications.	1 0 2 0 3 0 4 0 5 0 6 0 7 0		
8. . . . understand business processes for the application.	1 0 2 0 3 0 4 0 5 0 6 0 7 0		
9. . . . develop web-based systems.	1 0 2 0 3 0 4 0 5 0 6 0 7 0		
10. . . . maintain legacy systems.	1 0 2 0 3 0 4 0 5 0 6 0 7 0		
11. . . . integrate existing systems with new applications.	1 0 2 0 3 0 4 0 5 0 6 0 7 0		

A.1: The Contract

1. What was the approximate date on which the original contract was signed? _____
2. What was the intended length of the contract? _____
3. What was the approximate date the decision to terminate the contract was made? _____
4. The contract in question was for a single application multiple applications
5. What was the **total** dollar amount of the contract? Please provide your best estimate: \$ _____

6. How much termination notice was required according to the contract?
- A total of ____ months.
 - A total of ____ years.
 - No notice required.
 - The contract did not specify anything about a termination notice period.
 - A contract was not used for this outsourcing project.
7. What did your contract say about showing cause (a basis or reason) for terminating this outsourcing vendor?
- Cause must be shown for terminating the outsourcing contract.
 - The contract could be terminated without cause.
 - The contract did not specify anything about cause for termination.
 - A contract was not used.
8. Approximately how long had the outsourcing vendor developed applications for your company, including all contracts? ____ years

A.2 : The Application Outsourced

1. Please identify the country in which your application development and maintenance was primarily performed.
- United States Other: _____
2. For what type of platform was this system developed? (please check all that apply)
- IBM 308X and larger UNIX
 - IBM 43XX and larger Windows-based
 - IBM AS/400 Other _____
 - HP 9000, IBM RS/6000, and Sun
3. Approximately what percentage of annual outsourced application development is for legacy systems? ____%
4. The outsourced application is integrated with existing systems. Yes No
5. Total number of hours required to develop the system:
- 100 to 3,000 3,000 to 15,000 15,000 to 30,000 More than 30,000
6. Estimated project development and implementation time:
- 12 months or less 13 months to 24 months More than 24 months
7. Number of other systems involved with or integrated with the outsourced application:
- None One to three More than three
8. Number of departments (other than IT) involved with the outsourced application:
- One Two Three or more

A.3: Impact of Outsourcing

1. Did the initial decision to outsource decrease the size of your organization's internal IT staff?
- Yes
- What was the approximate number of total IT employees prior to outsourcing? ____
 - The IT staff represented approximately what percentage of total company employees prior to outsourcing? _____
 - After outsourcing, approximately how many IT employees were shifted to the outsourcer or let go? _____
- No
2. Was there a change in the overall IT budget after the initial decision to outsource?
- yes, it became larger yes, it became smaller no change

3. The previous outsourcing vendor was able to ...	Strongly Disagree			Neither Agree Nor Disagree			Strongly Agree
... improve the development life cycle	1	2	3	4	5	6	7
... improve the quality/accuracy of product	1	2	3	4	5	6	7
... improve the openness/robustness of product	1	2	3	4	5	6	7
... decrease maintenance levels	1	2	3	4	5	6	7
... decrease total cost of ownership	1	2	3	4	5	6	7

Section B. Below are statements regarding relationship quality aspects of the outsourcing contract with the previous vendor. Please indicate your level of agreement with the following statements:									
	Strongly Disagree					Neither Agree Nor Disagree		Strongly Agree	
1. In our relationship, the outsourcing vendor made decisions beneficial to us.	1	2	3	4	5	6	7	8	
2. In our relationship, the outsourcing vendor was always willing to provide assistance to us.	1	2	3	4	5	6	7	8	
3. In our relationship, the outsourcing vendor was always sincere.	1	2	3	4	5	6	7	8	
4. Both the outsourcing vendor and the company could be trusted to behave fairly.	1	2	3	4	5	6	7	8	
5. Both the outsourcing vendor and the company could be trusted not to take advantage of each other.	1	2	3	4	5	6	7	8	
6. In our relationship, the outsourcing vendor performed prespecified agreements very well.	1	2	3	4	5	6	7	8	
7. In our relationship, my firm faithfully provided support prespecified in the contract.	1	2	3	4	5	6	7	8	
8. In our relationship, both the outsourcing vendor and the company always tried to keep promises.	1	2	3	4	5	6	7	8	
9. Both the outsourcing vendor and the company were highly committed to the relationship.	1	2	3	4	5	6	7	8	
10. Both the outsourcing vendor and the company were willing to commit resources to sustain the relationship.	1	2	3	4	5	6	7	8	
11. Both the outsourcing vendor and the company effectively exchanged information with each other.	1	2	3	4	5	6	7	8	
12. Both the outsourcing vendor and the company communicated well with each other.	1	2	3	4	5	6	7	8	
13. In our relationship, both the outsourcing vendor and the company had different corporate cultures from one another.	1	2	3	4	5	6	7	8	
14. In our relationship, both the outsourcing vendor and the company had a hard time understanding one another's business rules and forms.	1	2	3	4	5	6	7	8	
15. In our relationship, both the outsourcing vendor and the company were similar in regards to the processes of problem solving, decision making, and communication.	1	2	3	4	5	6	7	8	
16. Both the outsourcing vendor and the company had compatible corporate cultures.	1	2	3	4	5	6	7	8	
17. Both the outsourcing vendor and the company accepted each other's culture.	1	2	3	4	5	6	7	8	
18. Both the outsourcing vendor and the company effectively supported activities that required mutual participation.	1	2	3	4	5	6	7	8	
19. In our relationship, the outsourcing vendor supported and managed most of the core information technologies the company needed.	1	2	3	4	5	6	7	8	
20. In our relationship, the outsourcing vendor was responsible for large portions of our system development.	1	2	3	4	5	6	7	8	
21. Both the outsourcing vendor and the company successfully completed critical tasks, that is, tasks on which the other relied.	1	2	3	4	5	6	7	8	
22. The manner and methods of communication quality between both the outsourcing vendor and the company were ...	Untimely	1	2	3	4	5	6	7	Timely
	Inaccurate	1	2	3	4	5	6	7	Accurate
	Incomplete	1	2	3	4	5	6	7	Complete
	Not Credible	1	2	3	4	5	6	7	Credible

Section C. Following are statements relating to satisfaction with your terminated outsourcing vendor. Please indicate your level of agreement with the following statements by circling the most appropriate number.

1. Relationship with the outsourcing vendor.	Dissonant	1	2	3	4	5	Harmonious
	Bad	1	2	3	4	5	Good
2. Attitude of the outsourcing vendor's staff.	Belligerent	1	2	3	4	5	Cooperative
	Negative	1	2	3	4	5	Positive
3. Communication with the outsourcing vendor's staff.	Dissonant	1	2	3	4	5	Harmonious
	Destructive	1	2	3	4	5	Productive
4. Processing of requests for changes to existing systems.	Slow	1	2	3	4	5	Fast
	Untimely	1	2	3	4	5	Timely
5. Time required for new systems development.	Unreasonable	1	2	3	4	5	Reasonable
	Unacceptable	1	2	3	4	5	Acceptable
6. Reliability of output information.	Low	1	2	3	4	5	High
	Inferior	1	2	3	4	5	Superior
7. Relevancy of output information.	Useless	1	2	3	4	5	Useful
	Irrelevant	1	2	3	4	5	Relevant
8. Accuracy of output information.	Inaccurate	1	2	3	4	5	Accurate
	Low	1	2	3	4	5	High
9. Precision of output information.	Low	1	2	3	4	5	High
	Uncertain	1	2	3	4	5	Definite
10. Completeness of the output information.	Insufficient	1	2	3	4	5	Sufficient
	Inadequate	1	2	3	4	5	Adequate
11. Degree of IS training provided to users.	Incomplete	1	2	3	4	5	Complete
	Low	1	2	3	4	5	High
12. Users' understanding of systems.	Insufficient	1	2	3	4	5	Sufficient
	Incomplete	1	2	3	4	5	Complete
13. Users' feelings of participation.	Negative	1	2	3	4	5	Positive
	Insufficient	1	2	3	4	5	Sufficient

Section D. Please indicate your level of agreement with the following statements related to the backsourced application development. Please leave blank any that do not apply.

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The morale of all of our other outsourcing vendors dropped after this outsourcing contract was terminated.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
2. After discontinuing this outsourcing contract, our other outsourcing vendors gained confidence in us.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
3. Discontinuing this outsourcing contract provoked a negative reaction with our other outsourcing vendors.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
4. We were able to backsource without a significant investment in resources to create a new management system.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
5. Discontinuing the outsourcing contract forced us to invest a good deal in setting up a new management system.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
6. Backsourcing required radical changes in the way we managed.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
7. After discontinuing the contract, we found it very difficult to locate and hire good IT employees.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
8. After discontinuing the contract, the cost of locating, hiring, and training new IT employees was extraordinarily high.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
9. After discontinuing the contract, we could not attract the people we considered acceptable to support our applications development and maintenance.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>
10. After discontinuing the contract, it took a long time for the internal development team to become productive.	1 <input type="radio"/>	2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>	7 <input type="radio"/>

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
11. After discontinuing the contract, we hired experienced people and had them producing results within a reasonable amount of time.	10	20 30 40 50 60 70	
12. After discontinuing the contract, the total length of time from start to finish to establish a new application development team and for them to become productive was extremely long.	10	20 30 40 50 60 70	
13. The previous outsourcing firm made it very difficult for us to discontinue the contract.	10	20 30 40 50 60 70	
14. After discontinuing the contract, the outsourcing vendor's reaction was the least of our problems.	10	20 30 40 50 60 70	
15. After discontinuing the contract, the outsourcing vendor was unhappy, but that was the end of it.	10	20 30 40 50 60 70	
16. After discontinuing the contract, we were not sure what the level of service would be.	10	20 30 40 50 60 70	
17. After discontinuing the contract, the service we received was worse than the service previously received.	10	20 30 40 50 60 70	
18. Before discontinuing the contract, we felt the service from in-house developers could be worse than the service we were receiving at that time.	10	20 30 40 50 60 70	
19. Before discontinuing the contract, we felt that backsourcing would require learning how to do things differently.	10	20 30 40 50 60 70	
20. I was unfamiliar with the policies of our in-house development group.	10	20 30 40 50 60 70	
21. After discontinuing the contract, we had to learn how the "system works" with the in-house development group.	10	20 30 40 50 60 70	
22. Discontinuing the outsourcing relationship meant we had to learn about the policies of our in-house development group.	10	20 30 40 50 60 70	
23. The previous outsourcing vendor provided us with particular privileges we would not receive elsewhere.	10	20 30 40 50 60 70	
24. By continuing to use the previous outsourcing vendor, certain benefits would have been received that would not have been received if the relationship were terminated.	10	20 30 40 50 60 70	
25. After discontinuing the contract, certain benefits were not retained.	10	20 30 40 50 60 70	
26. We lost preferential treatment after we discontinued the outsourcing relationship.	10	20 30 40 50 60 70	
27. After backsourcing, significant time was required to explain our application needs to the in-house development group.	10	20 30 40 50 60 70	
28. After discontinuing the outsourcing contract, we had to explain our processes and systems to the in-house development group.	10	20 30 40 50 60 70	
29. There was not much time and effort involved in beginning to use the in-house development group.	10	20 30 40 50 60 70	
30. After we discontinued the contract, it took a significant amount of time and effort to locate new IT employees.	10	20 30 40 50 60 70	
31. After discontinuing the contract, we had to devote significant resources to finding new IT employees.	10	20 30 40 50 60 70	
32. After we discontinued the contract, we had to conduct an extensive search to find new IT employees.	10	20 30 40 50 60 70	
33. Locating new IT employees took a great deal of time.	10	20 30 40 50 60 70	
34. After discontinuing the contract, we had to conduct a search for new IT employees.	10	20 30 40 50 60 70	
35. Significant time, energy, and effort went into building and maintaining the relationship with our previous outsourcing vendor.	10	20 30 40 50 60 70	
36. Overall, we had a significant investment in the relationship with the previous outsourcing vendor.	10	20 30 40 50 60 70	
37. All things considered, we have devoted significant resources into previous dealings with the previous outsourcing vendor.	10	20 30 40 50 60 70	
38. We have spent significant time and money with the previous outsourcing vendor.	10	20 30 40 50 60 70	
39. We have not invested significant time and money in the relationship with the previous outsourcing vendor.	10	20 30 40 50 60 70	

Section E. Please indicate your level of agreement with the following statements related to the backsource application development.

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The outsourcing vendor was able to meet project goals.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
2. The outsourcing vendor was innovative and creative.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
3. The outsourcing vendor produced high quality work.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
4. The outsourcing vendor was productive.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
5. The outsourcing vendor adhered to the budget.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
6. The outsourcing vendor adhered to the schedule.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
7. The outsourcing vendor operated efficiently.	1○ 2○ 3○ 4○ 5○ 6○ 7○		

Section F. This section deals with your perception of the outsourcing vendor service quality. Based upon your experiences, please indicate your level of agreement with each statement below.

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The outsourcing vendor had up-to-date hardware and software.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
2. The outsourcing vendor's physical facilities were visually appealing.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
3. The outsourcing vendor's employees were well dressed and neat in appearance.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
4. The appearance of the physical facilities of the outsourcing vendor were in keeping with the kind of services provided.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
5. When the outsourcing vendor promised to do something by a certain time, they did.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
6. When users had a problem, the outsourcing vendor showed a sincere interest in solving it.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
7. The outsourcing vendor was dependable.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
8. The outsourcing vendor provided their services at the times they promised to do so.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
9. The outsourcing vendor insisted on error-free records.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
10. The outsourcing vendor told users exactly when services would be performed.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
11. The outsourcing vendor employees gave prompt service to users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
12. The outsourcing vendor employees were always willing to help users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
13. The outsourcing vendor employees were never too busy to respond to users' requests.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
14. The behavior of the outsourcing vendor employees instilled confidence in users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
15. Users felt safe in their transactions with the outsourcing vendor employees.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
16. The outsourcing vendor employees were consistently courteous.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
17. The outsourcing vendor employees had the knowledge to do their job well.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
18. The outsourcing vendor gave users individual attention.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
19. The outsourcing vendor had operation hours convenient to all their users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
20. The outsourcing vendor had employees who gave users personal attention.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
21. The outsourcing vendor had the users' best interest at heart.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
22. The employees of the outsourcing vendor understood the specific needs of their users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		

Section G. Please rate the following application quality characteristics.			
	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The software reliability met the specifications of the contract.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
2. The software capability met the specifications of the contract.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
3. The software usability met the specifications of the contract.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
4. The software installability met the specifications of the contract.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
5. The software maintainability met the specifications of the contract.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
6. The software performance met the specifications of the contract.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
7. The software documentation met the specifications of the contract.	1○ 2○ 3○ 4○ 5○ 6○ 7○		

Section H. Please tell us about your firm and yourself (for statistical purposes only). All information is strictly confidential.

- Please identify the industry in which your organization operates.

<input type="checkbox"/> Agriculture and Mining	<input type="checkbox"/> Transportation and Warehousing	<input type="checkbox"/> Entertainment
<input type="checkbox"/> Utilities	<input type="checkbox"/> Information Technology	<input type="checkbox"/> Public Administration
<input type="checkbox"/> Construction	<input type="checkbox"/> Finance and Insurance	<input type="checkbox"/> Professional, Scientific and Technical Services
<input type="checkbox"/> Manufacturing	<input type="checkbox"/> Real Estate	<input type="checkbox"/> Other _____
<input type="checkbox"/> Wholesale and Retail	<input type="checkbox"/> Education	
<input type="checkbox"/> Management	<input type="checkbox"/> Health Care	
- Age of organization: _____ years
- What is your estimate of the number of employees in your organization currently? _____
- What is your estimate of the number of information technology employees in your organization? _____
- Estimated number of years your firm has practiced outsourcing: _____ years
- Estimated number of previous application development outsourcing contracts within the last five years that your firm has signed: _____
- On average, approximately how much money has been spent on IT per year over the last three years on an organization-wide basis? \$ _____
- What percentage of the IT budget allocated for application development and maintenance does your organization currently outsource? _____
- Who has decision authority over IT application development spending? (please check all that apply)

<input type="checkbox"/> CEO	<input type="checkbox"/> CFO	<input type="checkbox"/> COO	<input type="checkbox"/> CIO	<input type="checkbox"/> Head of IT department	<input type="checkbox"/> Head of application development dept.
<input type="checkbox"/> Head of other departments (in decentralized control environment)					
<input type="checkbox"/> Other _____					
- The IT management is centralized decentralized
- The IT budget is centralized decentralized
- Our organization performed poorly financially just prior to the initial outsourcing decision.

	Disagree					Agree
	1○ 2○ 3○ 4○ 5○ 6○ 7○					
- Our organization performed poorly financially, relative to the industry, just prior to the initial outsourcing decision.

	1○ 2○ 3○ 4○ 5○ 6○ 7○
--	----------------------
- You have been with this organization _____ years.
- You have been in your current position with this company _____ years.
- You are Male Female
- Your age: _____
- If you were with this organization at the time that the original contract was signed, what was your job title at that time? _____
- If you were with this organization at the contract termination decision, what was your job title at that time? _____
- What is your current job title? _____
- Were you involved in the initial decision to outsource? Yes No
- Were you involved in the contract termination decision? Yes No

– Thank you for participating in this study. Your help is greatly appreciated. –

IT Application Development Outsourcing Survey

QUESTIONNAIRE B - SWITCHING VENDORS

We are conducting research on application development outsourcing. Please take a few minutes to complete this survey. Your input is *very* important to us.

- Please do not put your name on this questionnaire. All information that you provide will be anonymous.
- Note: there are no right or wrong answers -- just your perceptions and insights about your outsourcing experiences.
- Your participation in this important study is greatly appreciated. We thank you in advance for your input.

For the purposes of this survey, please think back to the most recent application development outsourcing contract that resulted in a decision to switch the application development and maintenance to another vendor (i.e. switching). Please answer the questions with regard to that particular contract.

Section A. Below are questions regarding general aspects of the outsourcing decision. Please respond to these general questions and then to more specific questions regarding the (1) outsourcing contract, (2) the application outsourced, and (3) impact of outsourcing.

General Questions

1. Please indicate the level of strategic importance of the outsourced system, that is, the degree to which the application(s) increased the competitiveness of your firm.	Low 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> High
2. Our organization outsourced application development for this contract because the development could not be done in a timely manner in-house.	Strongly Disagree <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> Strongly Agree
3. In-house application development staff had little or no experience with the type of application outsourced.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>
4. The contract was tight, (i.e., included clauses related to things such as service levels, dispute resolution procedures, etc).	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>
5. "Hidden costs," or costs resulting from services paid for outside of the contract, were high.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>

Rate each of the following with regard to the skills and abilities of the previous application development outsourcing vendor.

The outsourcing vendor had the skills required to . . .	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
6. . . . build friendly interfaces for legacy systems.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>		
7. . . . develop successful object oriented applications.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>		
8. . . . understand business processes for the application.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>		
9. . . . develop web-based systems.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>		
10. . . . maintain legacy systems.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>		
11. . . . integrate existing systems with new applications.	1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/>		

A.1: The Contract

1. What was the approximate date on which the original contract was signed? _____
2. What was the intended length of the contract? _____
3. What was the approximate date the decision to terminate the contract was made? _____
4. The contract in question was for a single application multiple applications
5. What was the **total** dollar amount of the contract? Please provide your best estimate: \$ _____

6. How much termination notice was required according to the contract?
 A total of ____ months.
 A total of ____ years.
 No notice required.
 The contract did not specify anything about a termination notice period.
 A contract was not used for this outsourcing project.
7. What did your contract say about showing cause (a basis or reason) for terminating this outsourcing vendor?
 Cause must be shown for terminating the outsourcing contract.
 The contract could be terminated without cause.
 The contract did not specify anything about cause for termination.
 A contract was not used.
8. Approximately how long had the outsourcing vendor developed applications for your company, including all contracts? ____ years

A.2 : The Application Outsourced

1. Please identify the country in which your application development and maintenance was primarily performed.
 United States Other: _____
2. For what type of platform was this system developed? (please check all that apply)
 IBM 308X and larger UNIX
 IBM 43XX and larger Windows-based
 IBM AS/400 Other _____
 HP 9000, IBM RS/6000, and Sun
3. Approximately what percentage of annual outsourced application development is for legacy systems? ____%
4. The outsourced application is integrated with existing systems. Yes No
5. Total number of hours required to develop the system:
 100 to 3,000 3,000 to 15,000 15,000 to 30,000 More than 30,000
6. Estimated project development and implementation time:
 12 months or less 13 months to 24 months More than 24 months
7. Number of other systems involved with or integrated with the outsourced application:
 None One to three More than three
8. Number of departments (other than IT) involved with the outsourced application:
 One Two Three or more

A.3: Impact of Outsourcing

1. Did the initial decision to outsource decrease the size of your organization's internal IT staff?
 Yes
 • What was the approximate number of total IT employees prior to outsourcing? ____
 • The IT staff represented approximately what percentage of total company employees prior to outsourcing? ____
 • After outsourcing, approximately how many IT employees were shifted to the outsourcer or let go?

 No
2. Was there a change in the overall IT budget after the initial decision to outsource?
 yes, it became larger yes, it became smaller no change

3. The previous outsourcing vendor was able to ...	Strongly Disagree			Neither Agree Nor Disagree			Strongly Agree
... improve the development life cycle	1	2	3	4	5	6	7
... improve the quality/accuracy of product	1	2	3	4	5	6	7
... improve the openness/robustness of product	1	2	3	4	5	6	7
... decrease maintenance levels	1	2	3	4	5	6	7
... decrease total cost of ownership	1	2	3	4	5	6	7

Section B. Below are statements regarding relationship quality aspects of the outsourcing contract with the previous vendor. Please indicate your level of agreement with the following statements:									
	Strongly Disagree					Neither Agree Nor Disagree			Strongly Agree
1. In our relationship, the outsourcing vendor made decisions beneficial to us.	1	2	3	4	5	6	7		
2. In our relationship, the outsourcing vendor was always willing to provide assistance to us.	1	2	3	4	5	6	7		
3. In our relationship, the outsourcing vendor was always sincere.	1	2	3	4	5	6	7		
4. Both the outsourcing vendor and the company could be trusted to behave fairly.	1	2	3	4	5	6	7		
5. Both the outsourcing vendor and the company could be trusted not to take advantage of each other.	1	2	3	4	5	6	7		
6. In our relationship, the outsourcing vendor performed prespecified agreements very well.	1	2	3	4	5	6	7		
7. In our relationship, my firm faithfully provided support prespecified in the contract.	1	2	3	4	5	6	7		
8. In our relationship, both the outsourcing vendor and the company always tried to keep promises.	1	2	3	4	5	6	7		
9. Both the outsourcing vendor and the company were highly committed to the relationship.	1	2	3	4	5	6	7		
10. Both the outsourcing vendor and the company were willing to commit resources to sustain the relationship.	1	2	3	4	5	6	7		
11. Both the outsourcing vendor and the company effectively exchanged information with each other.	1	2	3	4	5	6	7		
12. Both the outsourcing vendor and the company communicated well with each other.	1	2	3	4	5	6	7		
13. In our relationship, both the outsourcing vendor and the company had different corporate cultures from one another.	1	2	3	4	5	6	7		
14. In our relationship, both the outsourcing vendor and the company had a hard time understanding one another's business rules and forms.	1	2	3	4	5	6	7		
15. In our relationship, both the outsourcing vendor and the company were similar in regards to the processes of problem solving, decision making, and communication.	1	2	3	4	5	6	7		
16. Both the outsourcing vendor and the company had compatible corporate cultures.	1	2	3	4	5	6	7		
17. Both the outsourcing vendor and the company accepted each other's culture.	1	2	3	4	5	6	7		
18. Both the outsourcing vendor and the company effectively supported activities that required mutual participation.	1	2	3	4	5	6	7		
19. In our relationship, the outsourcing vendor supported and managed most of the core information technologies the company needed.	1	2	3	4	5	6	7		
20. In our relationship, the outsourcing vendor was responsible for large portions of our system development.	1	2	3	4	5	6	7		
21. Both the outsourcing vendor and the company successfully completed critical tasks, that is, tasks on which the other relied.	1	2	3	4	5	6	7		
22. The manner and methods of communication quality between both the outsourcing vendor and the company were ...	Untimely	1	2	3	4	5	6	7	Timely
	Inaccurate	1	2	3	4	5	6	7	Accurate
	Incomplete	1	2	3	4	5	6	7	Complete
	Not Credible	1	2	3	4	5	6	7	Credible

Section C. Following are statements relating to satisfaction with your terminated outsourcing vendor. Please indicate your level of agreement with the following statements by circling the most appropriate number.

1. Relationship with the outsourcing vendor.	Dissonant	1	2	3	4	5	Harmonious
	Bad	1	2	3	4	5	Good
2. Attitude of the outsourcing vendor's staff.	Belligerent	1	2	3	4	5	Cooperative
	Negative	1	2	3	4	5	Positive
3. Communication with the outsourcing vendor's staff.	Dissonant	1	2	3	4	5	Harmonious
	Destructive	1	2	3	4	5	Productive
4. Processing of requests for changes to existing systems.	Slow	1	2	3	4	5	Fast
	Untimely	1	2	3	4	5	Timely
5. Time required for new systems development.	Unreasonable	1	2	3	4	5	Reasonable
	Unacceptable	1	2	3	4	5	Acceptable
6. Reliability of output information.	Low	1	2	3	4	5	High
	Inferior	1	2	3	4	5	Superior
7. Relevancy of output information.	Useless	1	2	3	4	5	Useful
	Irrelevant	1	2	3	4	5	Relevant
8. Accuracy of output information.	Inaccurate	1	2	3	4	5	Accurate
	Low	1	2	3	4	5	High
9. Precision of output information.	Low	1	2	3	4	5	High
	Uncertain	1	2	3	4	5	Definite
10. Completeness of the output information.	Insufficient	1	2	3	4	5	Sufficient
	Inadequate	1	2	3	4	5	Adequate
11. Degree of IS training provided to users.	Incomplete	1	2	3	4	5	Complete
	Low	1	2	3	4	5	High
12. Users' understanding of systems.	Insufficient	1	2	3	4	5	Sufficient
	Incomplete	1	2	3	4	5	Complete
13. Users' feelings of participation.	Negative	1	2	3	4	5	Positive
	Insufficient	1	2	3	4	5	Sufficient

Section D. Please indicate your level of agreement with the following statements related to the switched application development. Please leave blank any that do not apply.

	Strongly Disagree		Neither Agree Nor Disagree		Strongly Agree		
1. The morale of all of our other outsourcing vendors dropped after this outsourcing contract was terminated.	1	2	3	4	5	6	7
2. After discontinuing this outsourcing contract, our other outsourcing vendors gained confidence in us.	1	2	3	4	5	6	7
3. Discontinuing this outsourcing contract provoked a negative reaction with our other outsourcing vendors.	1	2	3	4	5	6	7
4. We were able to switch to another vendor without a significant investment in resources to create a new management system.	1	2	3	4	5	6	7
5. Discontinuing the outsourcing contract forced us to invest a good deal in setting up a new management system.	1	2	3	4	5	6	7
6. Switching to another vendor required radical changes in the way we managed.	1	2	3	4	5	6	7
7. After discontinuing the contract, we found it very difficult to locate and hire a good outsourcing vendor.	1	2	3	4	5	6	7
8. After discontinuing the contract, the cost of locating, hiring, and training a new outsourcing vendor was extraordinarily high.	1	2	3	4	5	6	7
9. After discontinuing the contract, we could not attract a vendor we considered acceptable to support our applications development and maintenance.	1	2	3	4	5	6	7
10. After discontinuing the contract, it took a long time for a new vendor to become productive.	1	2	3	4	5	6	7

	Strongly Disagree			Neither Agree Nor Disagree			Strongly Agree
11. After discontinuing the contract, we hired an experienced vendor and had them producing results within a reasonable amount of time.	1	2	3	4	5	6	7
12. After discontinuing the contract, the total length of time from start to finish to find a new outsourcing vendor and for them to become productive was extremely long.	1	2	3	4	5	6	7
13. The previous outsourcing firm made it very difficult for us to discontinue the contract.	1	2	3	4	5	6	7
14. After discontinuing the contract, the outsourcing vendor's reaction was the least of our problems.	1	2	3	4	5	6	7
15. After discontinuing the contract, the outsourcing vendor was unhappy, but that was the end of it.	1	2	3	4	5	6	7
16. After discontinuing the contract, we were not sure what the level of service would be.	1	2	3	4	5	6	7
17. After discontinuing the contract, the service we received was worse than the service previously received.	1	2	3	4	5	6	7
18. Before discontinuing the contract, we felt the service from another outsourcing vendor could be worse than the service we were receiving at that time.	1	2	3	4	5	6	7
19. Before discontinuing the contract, we felt that switching to a new vendor would require learning how to do things differently.	1	2	3	4	5	6	7
20. I was unfamiliar with the policies of other outsourcing vendors.	1	2	3	4	5	6	7
21. After discontinuing the contract, we had to learn how the "system works" with the new vendor.	1	2	3	4	5	6	7
22. Discontinuing the outsourcing relationship meant we had to learn about the policies of a new application development vendor.	1	2	3	4	5	6	7
23. The previous outsourcing vendor provided us with particular privileges we would not receive elsewhere.	1	2	3	4	5	6	7
24. By continuing to use the previous outsourcing vendor, certain benefits would have been received that would not have been received if the relationship were terminated.	1	2	3	4	5	6	7
25. After discontinuing the contract, certain benefits were not retained.	1	2	3	4	5	6	7
26. We lost preferential treatment after we discontinued the outsourcing relationship.	1	2	3	4	5	6	7
27. After switching to a new vendor, significant time was required to explain our application needs to the new vendor.	1	2	3	4	5	6	7
28. After discontinuing the outsourcing contract, we had to explain our processes and systems to the new outsourcing vendor.	1	2	3	4	5	6	7
29. There was not much time and effort involved in beginning to use a new outsourcing vendor.	1	2	3	4	5	6	7
30. After we discontinued the contract, it took a significant amount of time and effort to locate a new outsourcing vendor.	1	2	3	4	5	6	7
31. After discontinuing the contract, we had to devote significant resources to finding a new outsourcing vendor.	1	2	3	4	5	6	7
32. After we discontinued the contract, we had to conduct an extensive search to find a new vendor.	1	2	3	4	5	6	7
33. Locating a new outsourcing vendor took a great deal of time.	1	2	3	4	5	6	7
34. After discontinuing the contract, we had to conduct a search for a new vendor.	1	2	3	4	5	6	7
35. Significant time, energy, and effort went into building and maintaining the relationship with our previous outsourcing vendor.	1	2	3	4	5	6	7
36. Overall, we had a significant investment in the relationship with the previous outsourcing vendor.	1	2	3	4	5	6	7
37. All things considered, we have devoted significant resources into previous dealings with the previous outsourcing vendor.	1	2	3	4	5	6	7
38. We have spent significant time and money with the previous outsourcing vendor.	1	2	3	4	5	6	7
39. We have not invested significant time and money in the relationship with the previous outsourcing vendor.	1	2	3	4	5	6	7

Section E. Please indicate your level of agreement with the following statements related to the switched application development.

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The outsourcing vendor was able to meet project goals.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
2. The outsourcing vendor was innovative and creative.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
3. The outsourcing vendor produced high quality work.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
4. The outsourcing vendor was productive.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
5. The outsourcing vendor adhered to the budget.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
6. The outsourcing vendor adhered to the schedule.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
7. The outsourcing vendor operated efficiently.	1○ 2○ 3○ 4○ 5○ 6○ 7○		

Section F. This section deals with your perception of the outsourcing vendor service quality. Based upon your experiences, please indicate your level of agreement with each statement below.

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The outsourcing vendor had up-to-date hardware and software.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
2. The outsourcing vendor's physical facilities were visually appealing.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
3. The outsourcing vendor's employees were well dressed and neat in appearance.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
4. The appearance of the physical facilities of the outsourcing vendor were in keeping with the kind of services provided.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
5. When the outsourcing vendor promised to do something by a certain time, they did.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
6. When users had a problem, the outsourcing vendor showed a sincere interest in solving it.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
7. The outsourcing vendor was dependable.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
8. The outsourcing vendor provided their services at the times they promised to do so.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
9. The outsourcing vendor insisted on error-free records.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
10. The outsourcing vendor told users exactly when services would be performed.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
11. The outsourcing vendor employees gave prompt service to users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
12. The outsourcing vendor employees were always willing to help users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
13. The outsourcing vendor employees were never too busy to respond to users' requests.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
14. The behavior of the outsourcing vendor employees instilled confidence in users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
15. Users felt safe in their transactions with the outsourcing vendor employees.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
16. The outsourcing vendor employees were consistently courteous.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
17. The outsourcing vendor employees had the knowledge to do their job well.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
18. The outsourcing vendor gave users individual attention.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
19. The outsourcing vendor had operation hours convenient to all their users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
20. The outsourcing vendor had employees who gave users personal attention.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
21. The outsourcing vendor had the users' best interest at heart.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
22. The employees of the outsourcing vendor understood the specific needs of their users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		

Section G. Please rate the following application quality characteristics.			
	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The software reliability met the specifications of the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	
2. The software capability met the specifications of the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	
3. The software usability met the specifications of the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	
4. The software installability met the specifications of the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	
5. The software maintainability met the specifications of the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	
6. The software performance met the specifications of the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	
7. The software documentation met the specifications of the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	

Section H. Please tell us about your firm and yourself (for statistical purposes only). All information is strictly confidential.

- Please identify the industry in which your organization operates.

<input type="checkbox"/> Agriculture and Mining	<input type="checkbox"/> Transportation and Warehousing	<input type="checkbox"/> Entertainment
<input type="checkbox"/> Utilities	<input type="checkbox"/> Information Technology	<input type="checkbox"/> Public Administration
<input type="checkbox"/> Construction	<input type="checkbox"/> Finance and Insurance	<input type="checkbox"/> Professional, Scientific and Technical Services
<input type="checkbox"/> Manufacturing	<input type="checkbox"/> Real Estate	<input type="checkbox"/> Other _____
<input type="checkbox"/> Wholesale and Retail	<input type="checkbox"/> Education	
<input type="checkbox"/> Management	<input type="checkbox"/> Health Care	
- Age of organization: _____ years
- What is your estimate of the number of employees in your organization currently? _____
- What is your estimate of the number of information technology employees in your organization? _____
- Estimated number of years your firm has practiced outsourcing: _____ years
- Estimated number of previous application development outsourcing contracts within the last five years that your firm has signed: _____
- On average, approximately how much money has been spent on IT per year over the last three years on an organization-wide basis? \$ _____
- What percentage of the IT budget allocated for application development and maintenance does your organization currently outsource? _____
- Who has decision authority over IT application development spending? (please check all that apply)

<input type="checkbox"/> CEO	<input type="checkbox"/> CFO	<input type="checkbox"/> COO	<input type="checkbox"/> CIO	<input type="checkbox"/> Head of IT department	<input type="checkbox"/> Head of application development dept.
<input type="checkbox"/> Head of other departments (in decentralized control environment)					<input type="checkbox"/> Other _____
- The IT management is centralized decentralized
- The IT budget is centralized decentralized
- Our organization performed poorly financially just prior to the initial outsourcing decision.

	Disagree	Agree			
1○	2○	3○	4○	5○	6○ 7○
- Our organization performed poorly financially, relative to the industry, just prior to the initial outsourcing decision.

1○	2○	3○	4○	5○	6○	7○
----	----	----	----	----	----	----
- You have been with this organization _____ years.
- You have been in your current position with this company _____ years.
- You are Male Female
- Your age: _____
- If you were with this organization at the time that the original contract was signed, what was your job title at that time? _____
- If you were with this organization at the contract termination decision, what was your job title at that time? _____
- What is your current job title? _____
- Were you involved in the initial decision to outsource? Yes No
- Were you involved in the contract termination decision? Yes No

-- Thank you for participating in this study. Your help is greatly appreciated. --

IT Application Development Outsourcing Survey

QUESTIONNAIRE C - CONTINUING WITH THE SAME VENDOR

We are conducting research on application development outsourcing. Please take a few minutes to complete this survey. Your input is very important to us.

- Please do **not** put your name on this questionnaire. All information that you provide will be anonymous.
- Note: there are no right or wrong answers – just your perceptions and insights about your outsourcing experiences.
- Your participation in this important study is **greatly** appreciated. We thank you in advance for your input.

For the purposes of this survey, please think back to the most recent application development outsourcing contract that resulted in a decision to continue with the same vendor. Please answer the questions with regard to that particular contract.

Section A. Below are questions regarding general aspects of the outsourcing decision. Please respond to these general questions and then to more specific questions regarding the (1) outsourcing contract, (2) the application outsourced, and (3) impact of outsourcing.

General Questions		Low						High
1. Please indicate the level of strategic importance of the outsourced system, that is, the degree to which the application(s) increased the competitiveness of your firm.		1	2	3	4	5	6	7
2. Our organization outsourced application development for this contract because the development could not be done in a timely manner in-house.		Strongly Disagree		Neither Agree Nor Disagree			Strongly Agree	
3. In-house application development staff had little or no experience with the type of application outsourced.		1	2	3	4	5	6	7
4. The contract is tight, (i.e., includes clauses related to things such as service levels, dispute resolution procedures, etc).		1	2	3	4	5	6	7
5. "Hidden costs," or costs resulting from services paid for outside of the contract, are high.		1	2	3	4	5	6	7

Rate each of the following with regard to the skills and abilities of the current application development outsourcing vendor.		Strongly Disagree	Neither Agree Nor Disagree			Strongly Agree		
The outsourcing vendor has the skills required to . . .		1	2	3	4	5	6	7
6. . . . build friendly interfaces for legacy systems.		1	2	3	4	5	6	7
7. . . . develop successful object oriented applications.		1	2	3	4	5	6	7
8. . . . understand business processes for the application.		1	2	3	4	5	6	7
9. . . . develop web-based systems.		1	2	3	4	5	6	7
10. . . . maintain legacy systems.		1	2	3	4	5	6	7
11. . . . integrate existing systems with new applications.		1	2	3	4	5	6	7

A.1: The Contract

1. What was the approximate date on which the original contract was signed? _____
2. What was the intended length of the contract? _____
3. What was the approximate date the decision to continue with the same vendor was made? _____
4. The contract in question is for a single application multiple applications
5. What is the **total** dollar amount of the contract? Please provide your best estimate: \$ _____

6. How much termination notice is required according to the contract?
 A total of ____ months.
 A total of ____ years.
 No notice required.
 The contract does not specify anything about a termination notice period.
 A contract is not used for this outsourcing project.
7. What does your contract say about showing cause (a basis or reason) for terminating this outsourcing vendor?
 Cause must be shown for terminating the outsourcing contract.
 The contract can be terminated without cause.
 The contract does not specify anything about cause for termination.
 A contract is not used.
8. Approximately how long has the outsourcing vendor developed applications for your company, including all contracts? ____ years

A.2 : The Application Outsourced

1. Please identify the country in which your application development and maintenance is primarily performed.
 United States Other: _____
2. For what type of platform was this system developed? (please check all that apply)
 IBM 308X and larger UNIX
 IBM 43XX and larger Windows-based
 IBM AS/400 Other _____
 HP 9000, IBM RS/6000, and Sun
3. Approximately what percentage of annual outsourced application development is for legacy systems? ____%
4. The outsourced application is integrated with existing systems. Yes No
5. Total number of hours required to develop the system:
 100 to 3,000 3,000 to 15,000 15,000 to 30,000 More than 30,000
6. Estimated project development and implementation time:
 12 months or less 13 months to 24 months More than 24 months
7. Number of other systems involved with or integrated with the outsourced application:
 None One to three More than three
8. Number of departments (other than IT) involved with the outsourced application:
 One Two Three or more

A.3: Impact of Outsourcing

1. Did the initial decision to outsource decrease the size of your organization's internal IT staff?
 Yes
 • What was the approximate number of total IT employees prior to outsourcing? ____
 • The IT staff represented approximately what percentage of total company employees prior to outsourcing? ____
 • After outsourcing, approximately how many IT employees were shifted to the outsourcer or let go? ____
 No
2. Was there a change in the overall IT budget after the initial decision to outsource?
 yes, it became larger yes, it became smaller no change

3. The outsourcing vendor was able to ...	Strongly Disagree	Neither Agree Nor Disagree					Strongly Agree
... improve the development life cycle	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
... improve the quality/accuracy of product	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
... improve the openness/robustness of product	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>
... decrease maintenance levels	1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	6 <input type="radio"/>	7 <input type="radio"/>

Section B. Below are statements regarding relationship quality aspects of the current outsourcing contract. Please indicate your level of agreement with the following statements:									
	Strongly Disagree					Neither Agree Nor Disagree			Strongly Agree
1. In our relationship, the outsourcing vendor makes decisions beneficial to us.	1	2	3	4	5	6	7		
2. In our relationship, the outsourcing vendor is always willing to provide assistance to us.	1	2	3	4	5	6	7		
3. In our relationship, the outsourcing vendor is always sincere.	1	2	3	4	5	6	7		
4. Both the outsourcing vendor and the company can be trusted to behave fairly.	1	2	3	4	5	6	7		
5. Both the outsourcing vendor and the company can be trusted not to take advantage of each other.	1	2	3	4	5	6	7		
6. In our relationship, the outsourcing vendor performs prespecified agreements very well.	1	2	3	4	5	6	7		
7. In our relationship, my firm faithfully provides support prespecified in the contract.	1	2	3	4	5	6	7		
8. In our relationship, both the outsourcing vendor and the company always try to keep promises.	1	2	3	4	5	6	7		
9. Both the outsourcing vendor and the company are highly committed to the relationship.	1	2	3	4	5	6	7		
10. Both the outsourcing vendor and the company are willing to commit resources to sustain the relationship.	1	2	3	4	5	6	7		
11. Both the outsourcing vendor and the company effectively exchange information with each other.	1	2	3	4	5	6	7		
12. Both the outsourcing vendor and the company communicate well with each other.	1	2	3	4	5	6	7		
13. In our relationship, both the outsourcing vendor and the company have different corporate cultures from one another.	1	2	3	4	5	6	7		
14. In our relationship, both the outsourcing vendor and the company have a hard time understanding one another's business rules and forms.	1	2	3	4	5	6	7		
15. In our relationship, both the outsourcing vendor and the company are similar in regards to the processes of problem solving, decision making, and communication.	1	2	3	4	5	6	7		
16. Both the outsourcing vendor and the company have compatible corporate cultures.	1	2	3	4	5	6	7		
17. Both the outsourcing vendor and the company accept each other's culture.	1	2	3	4	5	6	7		
18. Both the outsourcing vendor and the company effectively support activities that require mutual participation.	1	2	3	4	5	6	7		
19. In our relationship, the outsourcing vendor supports and manages most of the core information technologies the company needs.	1	2	3	4	5	6	7		
20. In our relationship, the outsourcing vendor is responsible for large portions of our system development.	1	2	3	4	5	6	7		
21. Both the outsourcing vendor and the company successfully complete critical tasks, that is, tasks on which the other relies.	1	2	3	4	5	6	7		
22. The manner and methods of communication quality between both the outsourcing vendor and the company are ...	Untimely	1	2	3	4	5	6	7	Timely
	Inaccurate	1	2	3	4	5	6	7	Accurate
	Incomplete	1	2	3	4	5	6	7	Complete
	Not Credible	1	2	3	4	5	6	7	Credible

Section C. Following are statements relating to satisfaction with your current outsourcing vendor. Please indicate your level of agreement with the following statements by circling the most appropriate number.

1. Relationship with the outsourcing vendor.	Dissonant	1	2	3	4	5	Harmonious
	Bad	1	2	3	4	5	Good
2. Attitude of the outsourcing vendor's staff.	Belligerent	1	2	3	4	5	Cooperative
	Negative	1	2	3	4	5	Positive
3. Communication with the outsourcing vendor's staff.	Dissonant	1	2	3	4	5	Harmonious
	Destructive	1	2	3	4	5	Productive
4. Processing of requests for changes to existing systems.	Slow	1	2	3	4	5	Fast
	Untimely	1	2	3	4	5	Timely
5. Time required for new systems development.	Unreasonable	1	2	3	4	5	Reasonable
	Unacceptable	1	2	3	4	5	Acceptable
6. Reliability of output information.	Low	1	2	3	4	5	High
	Inferior	1	2	3	4	5	Superior
7. Relevancy of output information.	Useless	1	2	3	4	5	Useful
	Irrelevant	1	2	3	4	5	Relevant
8. Accuracy of output information.	Inaccurate	1	2	3	4	5	Accurate
	Low	1	2	3	4	5	High
9. Precision of output information.	Low	1	2	3	4	5	High
	Uncertain	1	2	3	4	5	Definite
10. Completeness of the output information.	Insufficient	1	2	3	4	5	Sufficient
	Inadequate	1	2	3	4	5	Adequate
11. Degree of IS training provided to users.	Incomplete	1	2	3	4	5	Complete
	Low	1	2	3	4	5	High
12. Users' understanding of systems.	Insufficient	1	2	3	4	5	Sufficient
	Incomplete	1	2	3	4	5	Complete
13. Users' feelings of participation.	Negative	1	2	3	4	5	Positive
	Insufficient	1	2	3	4	5	Sufficient

Section D. Please indicate your level of agreement with the following statements related to the current application development. Please leave blank any that do not apply.

	Strongly Disagree			Neither Agree Nor Disagree			Strongly Agree
1. The morale of all of our other outsourcing vendors would drop if this outsourcing contract were terminated.	1	2	3	4	5	6	7
2. If this outsourcing contract was discontinued, our other outsourcing vendors would gain confidence in us	1	2	3	4	5	6	7
3. Discontinuing this outsourcing contract would provoke a negative reaction with our other outsourcing vendors.	1	2	3	4	5	6	7
4. We would be able to switch to another vendor or bring the application development back in-house without a significant investment in resources to create a new management system.	1	2	3	4	5	6	7
5. Discontinuing the outsourcing contract would force us to invest a good deal in setting up a new management system.	1	2	3	4	5	6	7
6. Switching to another vendor or bringing the application development back in-house would require radical changes in the way we manage.	1	2	3	4	5	6	7
7. If we discontinued the contract, we would find it very difficult to locate and hire good IT employees.	1	2	3	4	5	6	7
8. If we discontinued the contract, the cost of locating, hiring, and training new IT employees would be extraordinarily high.	1	2	3	4	5	6	7
9. If we discontinued the contract, we could not attract the people we considered acceptable to support our applications development and maintenance.	1	2	3	4	5	6	7
10. If we discontinued the contract, it would take a long time for a new vendor or an internal department to become productive.	1	2	3	4	5	6	7

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
11. If we discontinued the contract, we could hire experienced people and have them producing results within a reasonable amount of time.	1○	2○ 3○ 4○ 5○ 6○ 7○	
12. If we discontinued the contract, the total length of time from start to finish to establish a new application development and maintenance team and for them to become productive would be extremely long.	1○	2○ 3○ 4○ 5○ 6○ 7○	
13. The current outsourcing firm makes it very difficult for us to discontinue the contract.	1○	2○ 3○ 4○ 5○ 6○ 7○	
14. If we discontinued the contract, the outsourcing vendor's reaction would be the least of our problems.	1○	2○ 3○ 4○ 5○ 6○ 7○	
15. If we discontinued the contract, the outsourcing vendor would be unhappy, but that would be the end of it.	1○	2○ 3○ 4○ 5○ 6○ 7○	
16. If we discontinued the contract, we are not sure what the level of service would be.	1○	2○ 3○ 4○ 5○ 6○ 7○	
17. If we discontinued the contract, the service we would receive would probably be worse than the service received currently.	1○	2○ 3○ 4○ 5○ 6○ 7○	
18. The service from another outsourcing vendor or from in-house developers could be worse than the service we are receiving at this time.	1○	2○ 3○ 4○ 5○ 6○ 7○	
19. Switching to a new vendor or bringing the application development back in-house would require learning how to do things differently.	1○	2○ 3○ 4○ 5○ 6○ 7○	
20. I am unfamiliar with the policies of other outsourcing vendors or with an in-house application development group.	1○	2○ 3○ 4○ 5○ 6○ 7○	
21. If this outsourcing contract were discontinued, we would have to learn how the "system works" with the new vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
22. Discontinuing the outsourcing relationship would mean we had to learn about the policies of a new application development vendor or in-house development group.	1○	2○ 3○ 4○ 5○ 6○ 7○	
23. The current outsourcing vendor provides us with particular privileges we would not receive elsewhere.	1○	2○ 3○ 4○ 5○ 6○ 7○	
24. By continuing to use the same outsourcing vendor, certain benefits can be received that would not be received if the relationship were terminated.	1○	2○ 3○ 4○ 5○ 6○ 7○	
25. If we discontinued the contract, certain benefits would not be retained.	1○	2○ 3○ 4○ 5○ 6○ 7○	
26. We would lose preferential treatment if we discontinued the outsourcing relationship.	1○	2○ 3○ 4○ 5○ 6○ 7○	
27. If we switched to a new vendor, significant time would be required to explain our application needs to the new vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
28. If this outsourcing contract were discontinued, we would have to explain our processes and systems to the new outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
29. There would not be much time and effort involved in beginning to use a new outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
30. If we discontinued the contract, it would take a significant amount of time and effort to locate a new outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
31. If we discontinued the contract, we would have to devote significant resources to finding a new outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
32. If we discontinued the contract, we would have to conduct an extensive search to find a new vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
33. Locating a new outsourcing vendor takes a great deal of time.	1○	2○ 3○ 4○ 5○ 6○ 7○	
34. If we discontinued the contract, we would have to conduct a search for a new vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
35. Significant time, energy, and effort went into building and maintaining the relationship with our current outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
36. Overall, we have a significant investment in the relationship with the current outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
37. All things considered, we have devoted significant resources into previous dealings with the current outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
38. We have spent significant time and money with the current outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	
39. We have not invested significant time and money in the relationship with the current outsourcing vendor.	1○	2○ 3○ 4○ 5○ 6○ 7○	

Section E. Please indicate your level of agreement with the following statements related to the current application development.

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The outsourcing vendor is able to meet project goals.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
2. The outsourcing vendor is innovative and creative.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
3. The outsourcing vendor produces high quality work.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
4. The outsourcing vendor is productive.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
5. The outsourcing vendor adheres to the budget.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
6. The outsourcing vendor adheres to the schedule.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
7. The outsourcing vendor operates efficiently.	1○ 2○ 3○ 4○ 5○ 6○ 7○		

Section F. This section deals with your perception of the outsourcing vendor service quality. Based upon your experiences, please indicate your level of agreement with each statement below.

	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree
1. The outsourcing vendor has up-to-date hardware and software.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
2. The outsourcing vendor's physical facilities are visually appealing.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
3. The outsourcing vendor's employees are well dressed and neat in appearance.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
4. The appearance of the physical facilities of the outsourcing vendor are in keeping with the kind of services provided.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
5. When the outsourcing vendor promises to do something by a certain time, they do.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
6. When users have a problem, the outsourcing vendor shows a sincere interest in solving it.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
7. The outsourcing vendor is dependable.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
8. The outsourcing vendor provides their services at the times they promise to do so.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
9. The outsourcing vendor insists on error-free records.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
10. The outsourcing vendor tells users exactly when services will be performed.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
11. The outsourcing vendor employees give prompt service to users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
12. The outsourcing vendor employees are always willing to help users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
13. The outsourcing vendor employees are never too busy to respond to users' requests.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
14. The behavior of the outsourcing vendor employees instills confidence in users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
15. Users feel safe in their transactions with the outsourcing vendor employees.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
16. The outsourcing vendor employees are consistently courteous.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
17. The outsourcing vendor employees have the knowledge to do their job well.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
18. The outsourcing vendor gives users individual attention.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
19. The outsourcing vendor has operation hours convenient to all their users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
20. The outsourcing vendor has employees who give users personal attention.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
21. The outsourcing vendor has the users' best interest at heart.	1○ 2○ 3○ 4○ 5○ 6○ 7○		
22. The employees of the outsourcing vendor understand the specific needs of their users.	1○ 2○ 3○ 4○ 5○ 6○ 7○		

Section G. Please rate the following application quality characteristics.						
	Strongly Disagree	Neither Agree Nor Disagree	Strongly Agree			
1. The software reliability meets the specifications of the contract.	1○	2○	3○	4○	5○	6○ 7○
2. The software capability meets the specifications of the contract.	1○	2○	3○	4○	5○	6○ 7○
3. The software usability meets the specifications of the contract.	1○	2○	3○	4○	5○	6○ 7○
4. The software installability meets the specifications of the contract.	1○	2○	3○	4○	5○	6○ 7○
5. The software maintainability meets the specifications of the contract.	1○	2○	3○	4○	5○	6○ 7○
6. The software performance meets the specifications of the contract.	1○	2○	3○	4○	5○	6○ 7○
7. The software documentation meets the specifications of the contract.	1○	2○	3○	4○	5○	6○ 7○

Section H. Please tell us about your firm and yourself (for statistical purposes only). All information is strictly confidential.

- Please identify the industry in which your organization operates.

<input type="checkbox"/> 1 Agriculture and Mining	<input type="checkbox"/> 7 Transportation and Warehousing	<input type="checkbox"/> 13 Entertainment
<input type="checkbox"/> 2 Utilities	<input type="checkbox"/> 8 Information Technology	<input type="checkbox"/> 14 Public Administration
<input type="checkbox"/> 3 Construction	<input type="checkbox"/> 9 Finance and Insurance	<input type="checkbox"/> 15 Professional, Scientific and Technical Services
<input type="checkbox"/> 4 Manufacturing	<input type="checkbox"/> 10 Real Estate	<input type="checkbox"/> 16 Other _____
<input type="checkbox"/> 5 Wholesale and Retail	<input type="checkbox"/> 11 Education	
<input type="checkbox"/> 6 Management	<input type="checkbox"/> 12 Health Care	
- Age of organization: _____ years
- What is your estimate of the number of employees in your organization currently? _____
- What is your estimate of the number of information technology employees in your organization? _____
- Estimated number of years your firm has practiced outsourcing: _____ years
- Estimated number of previous application development outsourcing contracts within the last five years that your firm has signed: _____
- On average, approximately how much money has been spent on IT per year over the last three years on an organization-wide basis? \$ _____
- What percentage of the IT budget allocated for application development and maintenance does your organization currently outsource? _____
- Who has decision authority over IT application development spending? (please check all that apply)

<input type="checkbox"/> 1 CEO	<input type="checkbox"/> 2 CFO	<input type="checkbox"/> 3 COO	<input type="checkbox"/> 4 CIO	<input type="checkbox"/> 5 Head of IT department	<input type="checkbox"/> 6 Head of application development dept.
<input type="checkbox"/> 7 Head of other departments (in decentralized control environment)	<input type="checkbox"/> 8 Other _____				
- The IT management is 1 centralized 2 decentralized
- The IT budget is 1 centralized 2 decentralized
- Our organization performed poorly financially just prior to the initial outsourcing decision.

	Disagree					Agree
	1○	2○	3○	4○	5○	6○ 7○
- Our organization performed poorly financially, relative to the industry, just prior to the initial outsourcing decision.

	1○	2○	3○	4○	5○	6○ 7○
--	----	----	----	----	----	-------
- You have been with this organization _____ years.
- You have been in your current position with this company _____ years.
- You are 1 Male 2 Female
- Your age: _____
- If you were with this organization at the time that the original contract was signed, what was your job title at that time? _____
- If you were with this organization at the contract continuation decision, what was your job title at that time? _____
- What is your current job title? _____
- Were you involved in the initial decision to outsource? Yes No
- Were you involved in the contract continuation decision? Yes No

-- Thank you for participating in this study. Your help is greatly appreciated. --

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