Association for Information Systems
AIS Electronic Library (AISeL)

ICIS 1999 Proceedings

International Conference on Information Systems (ICIS)

December 1999

Client Satisfaction with Outsourced IT Services: A Transaction-Cost Approach

Amit Das
Nanyang Technological University

Christina Soh
Nanyang Technological University

Patrick Lee
Nanyang Technological University

Follow this and additional works at: http://aisel.aisnet.org/icis1999

CLIENT SATISFACTION WITH OUTSOURCED IT SERVICES: A TRANSACTION-COST APPROACH

Amit Das
Christina Soh
Patrick Lee
Nanyang Technological University
Singapore

Abstract

The quality of outsourced IT services can be traced to attributes of the services such as tangibles, responsiveness, reliability, assurance, and empathy. The relative impact of these attributes on client satisfaction varies across different IT services (applications, data center, EUC support, network administration, and help desk), and one or few attributes stand out as "drivers" of client satisfaction for each service. To understand which attributes drive satisfaction in a service, we characterize five commonly outsourced IT services using dimensions provided by transaction cost economics (TCE): frequency, uncertainty, and asset specificity (Williamson 1975, 1985). We propose that the TCE characteristics of each service determine the drivers of client satisfaction for that service. We present data from a recently-completed survey to test the linkage between TCE characteristics and service quality.

1. INTRODUCTION

As outsourcing gains popularity, a wide variety of IT services are being entrusted to vendor organizations. These services include applications development and maintenance, "big-iron" data center applications, support for end-user computing, administration of the network infrastructure, and technical support help desks. Prior work in IT outsourcing (Lacity, Willcocks, and Feeny 1996) has provided frameworks to identify appropriate services for outsourcing based on their business contribution, economic efficiency, and technical maturity. In this paper, we focus on the characteristics of the service transaction and its relation to the quality of service received by the client. This is an important issue, as the level of vendor service moderates the impact of IT on the client organization.

Past research on service quality identifies five attributes of a service as critical to client satisfaction: tangibles, responsiveness, reliability, assurance, and empathy (Zeithaml, Parasuraman, and Berry 1990). Given the differences among services, it is reasonable to expect variation in the relative importance of the five attributes for different services. In this paper, we characterize five commonly outsourced services (applications, data center, EUC, network administration, and help desk) using dimensions provided by transaction cost economics (TCE): frequency, uncertainty, and asset specificity (Williamson 1975, 1985). We propose that the relative importance of the service attributes (tangibles, responsiveness, reliability, assurance, and empathy) for different outsourced IT services is related to the characteristics of the services along the TCE dimensions of frequency, uncertainty and asset specificity. We present data from a recently-completed survey of outsourcing clients to test the linkage between service characteristics and the attributes of service that provide the most leverage for improving client satisfaction. Following this, we describe the next steps of our research-in-progress.

2. THEORY

While traditional measures of IS effectiveness (Delone and McLean 1992) have centered on the product (i.e., system) delivered to users, current thinking suggests a more "service-oriented" view of the IS function and its evaluation. This service-oriented view

is especially appropriate when the IS function is outsourced to a vendor and the outsourcing vendor is assessed periodically to determine whether agreed-upon "service levels" are being kept up.

The SERVQUAL instrument for the measurement of service quality has been developed and refined in the marketing literature over the last 15 years (Parasuraman, Zeithaml, and Berry 1985; Zeithaml, Parasuraman, and Berry 1990, 1993). In this view, service quality is founded on a comparison between the expected and realized[1] levels of five attributes of service:

* *tangibles*: physical facilities, equipment, and the appearance of personnel,
* *responsiveness*: willingness to help customers and provide prompt service,
* *reliability*: ability to perform the promised service dependably and accurately,
* *assurance*: knowledge and courtesy of employees; ability to inspire trust and confidence, and
* *empathy*: caring, individualized attention that the service provider gives its customers.

The use of service quality to measure information systems effectiveness was pioneered by Pitt, Watson, and Kavan (1997), in the context of an in-house IT function. Since then, concerns have been raised about the dimensionality (i.e., non-orthogonality) of the SERVQUAL attributes and the usefulness of eliciting "expected" levels of the attributes (Van Dyke, Kappelman, and Prybutok 1997),[2] but the relevance of the SERVQUAL attributes to the measurement of information systems effectiveness appears to have been generally accepted (Kettinger and Lee 1997). In this study, we apply the service quality measures in the client-vendor context. We use the service attributes as independent variables and *client satisfaction* (indicated by positive affect toward the vendor, willingness to renew the relationship, and willingness to recommend the vendor to other potential clients) as a dependent variable. The specific service attributes that have the largest impact on client satisfaction are identified by regression analysis. The relative impacts of the five service attributes on client satisfaction are expected to vary from service to service.

Finally, transaction cost economics (Williamson 1975, 1985) has emerged as one of the most influential frameworks for the analysis of business activities and whether they should be performed in-house or contracted from the market. TCE identifies the following dimensions of transactions:

1. *Frequency* of recurrence of transactions.

2. *Uncertainty*, which could arise from
   * true stochasticity (randomness), such as demand uncertainty
   * complexity that overwhelms bounded rationality (e.g., uncertainty in chess)
   * strategic/opportunistic behavior ("self-seeking with guile") by either party in unforeseen contingencies.

3. *Asset-specificity*, transaction-specific investments made by either party to facilitate the transaction at hand, investments whose value outside of the specific transaction would be considerably less. Such investments signal commitment on the part of a partner. For instance, a large client may insist that an outsourcing vendor invest in
   * custom equipment (mainframes, specialized software), or
   * specialized employees (trained in particular platforms/applications e.g., Unix, Lotus Notes).

3. PROPOSITIONS

We posit the following links between the TCE characterization of each IT service and the service attributes that drive client satisfaction with that service.

1. The higher the *uncertainty* inherent in a service transaction, the greater the emphasis placed by clients on the vendor's *assurance*: since uncertainty arises from complexity or fear of strategic behavior, it is important that clients perceive that the vendor is knowledgeable and trustworthy.

---

[1]I.e., that actually experienced by the customer.

[2]This calls into question the meaning of difference or "gap" in the original SERVQUAL methodology.

2. The higher the *uncertainty* inherent in a service transaction, the greater the emphasis placed by clients on the vendor's *empathy*: since all contingencies cannot be envisaged, the client relies on the vendor's "reasonableness" and willingness to see the client's point of view.

3. The higher the *frequency* of a service transaction, the greater the emphasis placed by clients on the vendor's *responsiveness*: since waiting for service is usually associated with a slowdown or interruption in work for the client, prompt response becomes critical when the number of transactions increases.

4. The higher the *frequency* of a service transaction, the greater the emphasis placed by clients on the vendor's *reliability*: the ability to perform dependably and accurately every time is more critical for recurring problems.

5. The higher the *asset-specificity* of a service transaction, the greater the emphasis placed by clients on the vendor's *tangibles*: the physical assets (e.g., hardware, software, and test equipment) earmarked by the vendor for a particular client account signals the vendor's commitment to the client.

The relations between TCE characteristics of services and their drivers of client satisfaction are shown in Figure 1.
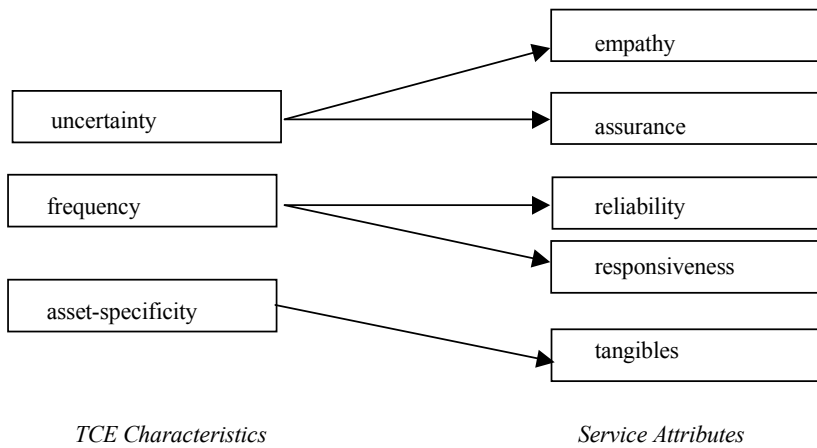
TCE Characteristics　　　　　　　　　　　*Service Attributes*

Figure 1. Service Characteristics and Drivers of Client Satisfaction

The characterization of the five services along TCE dimensions of frequency, uncertainty, and asset-specificity is currently based on our qualitative understanding of the services, drawn from discussions with vendor managers of the service, and interviews with clients. As described later, the next stage of our research involves the characterization of the services using survey data obtained from the account managers of the vendor firm.

•   Applications services (Apps) is characterized as low frequency (because systems development is usually undertaken on a project basis), high uncertainty (substantial likelihood of not achieving desired outcomes), and high specificity (both vendor and clients need to make substantial investments in mutual learning).

•   Data center services (DC) involving mainframe hardware/software, operations, and security are characterized as high frequency (following a predetermined schedule), low uncertainty (relatively structured requirements), and high specificity (requiring substantial investments in hardware and software by the vendor).

•   End-user computing (EUC) support for PC and notebook users is characterized as high frequency (based on day-to-day needs), low uncertainty (involving "commonplace" problems), and low specificity (fairly generic resources can be applied by the vendor to solve most clients' problems; no special-purpose hardware, software or personnel are needed).

•   Facilities management (FM), which involves operation/administration of the network infrastructure, is characterized as high frequency (day-to-day needs), low uncertainty (uses standard procedures), and high specificity (because dedicated hardware e.g., network sniffers, and software e.g., network management tools may be deployed by the vendor).

•   The tech support help desk (Helpdesk) for groupware applications is characterized as high frequency (high volume of calls from each client organization), low fncertainty (mainly simple, repetitive problems), and low specificity (the call center infrastructure can service many clients simultaneously).

The combination of the service characteristics and our propositions relating service characteristics to the drivers of client satisfaction enables us predict which service attributes (tangibles, responsiveness, reliability, assurance and empathy) are likely to have *most* influence on client satisfaction for each service.[3] Table 1 shows our predictions.

Table 1. Predicted Relationships

Service	Task Characteristics			Drivers of client satisfaction (Predicted)				
	Frequency	*Uncertainty*	*Specificity*	*Tangibles*	*Rely*	*Respond*	*Assure*	*Empathy*
Apps	Low	High	High	√			√	√
DC	High	Low	High	√	√	√		
EUC	High	Low	Low		√	√		
FM	High	Low	High	√	√	√		
Helpdesk	High	Low	Low		√	√		

4. METHODOLOGY

The data used in this study were collected as part of a customer satisfaction survey by an outsourcing vendor. The vendor provides the full range of outsourcing services, but we use data from five common services for our study:

- applications development and maintenance,
- data center services,
- support for end-user computing,
- administration of the network infrastructure (this service is called "Facilities Management" by the vendor), and
- a technical support help desk service (focusing on groupware, in our case).

The data collection instrument was adapted from SERVQUAL (Zeithaml, Parasuraman, and Berry 1990) and its IS-customized derivatives (Pitt, Watson, and Kavan 1995). The original SERVQUAL instrument measures both expected and realized levels of service attributes to determine the "gap" between expectations and experience.

In the pilot stage of our survey, however, it was found that respondents interpreted "expected" levels of various service attributes as their "ideal" values, i.e., the extreme points of the scales (for a discussion of this phenomenon, see Van Dyke, Kappelman, and Prybutok 1997). The final version of the questionnaire thus elicited only the "experienced" or realized levels of the various service attributes; this approach to measuring "direct" perceptions of service quality is sometimes called SERVPERF to distinguish it from the original SERVQUAL.

The survey questionnaire was developed with significant input from the account managers of the vendor firm. The pilot instrument was refined through testing in six client organizations before it was finalized. Care was taken to customize the SERVQUAL dimensions to the specific research context, without compromising the spirit of the original instrument. While most items in the questionnaire were kept uniform across the five services, a few minor changes were required to adapt to the contextual features of particular services.[4] All constructs—SERVQUAL attributes as well as client satisfaction—were measured using seven-point Likert scales.

The number of usable responses for the five services is summarized in Table 2. The confidentiality of respondents was protected throughout by releasing only aggregated findings to the vendor collaborating in the study.

---

[3]As pointed out in the service quality literature, all five service attributes are necessary for client satisfaction. We focus here on the attributes with the largest *marginal* contribution, i.e., the ones that provide the most leverage for boosting client satisfaction. These attributes may be viewed as "drivers" of client satisfaction for a service.

[4]A complete list of all questionnaire items for all five services is available from the authors.

Table 2. Survey Sample

Service	Mailout	Usable Responses	Response Rate
Applications	228	115	50%
Data Center	49	36	73%
End-user Computing	68	43	63%
Facilities Management	83	37	45%
Groupware Helpdesk	243	75	31%

5. PRELIMINARY ANALYSIS

The regression of the dependent variable—client satisfaction—on the five service attributes is expected to identify the drivers of client satisfaction for each service. We compare the empirically-observed drivers to those predicted above (by combining service characteristics and our theoretical propositions). The predicted and observed drivers of client satisfaction are summarized in Table 3. Shaded cells indicate agreement between prediction and observation; values in parentheses indicate the regression coefficients of the (statistically significant) service attributes.[5]

Table 3. Predicted versus Observed Results

Service	Predicted Drivers					Observed (Regression)				
	Tangibles	*Rely*	*Resp*	*Assure*	*Empathy*	*Tangibles*	*Rely*	*Resp*	*Assure*	*Empathy*
Apps	√			√	√	√ (0.407)			√ (0.280)	
DC	√	√	√				√ (0.461)		√ (0.648)	
EUC		√	√						√ (0.610)	
FM	√	√	√			√ (0.412)	√ (0.337)	√ (0.329)		
Helpdesk		√	√				√ (0.342)		√ (0.677)	

Across the five services, all constructs—service attributes and client satisfaction—displayed acceptable reliability (Cronbach's alpha in excess of 0.8 throughout). The regression models for all five services met the criteria of low multicollinearity (VIF between 3 and 10[6]), approximately normal distribution of residuals, and high proportion of explained variance (R^2 between 0.65 and 0.85).

We observe agreement between predicted and observed drivers in 16 cells of the 5 × 5 matrix. While this is far from perfect, we see some patterns in the areas of disagreement. While the role of tangibles and reliability is found to agree with our predictions, responsiveness appears to play a *smaller* role than predicted. One possible reason for this may be that responsiveness requirements are increasingly institutionalized in service level agreements (SLA), reducing the potential for variability. Assurance (trust and confidence) shows up *more strongly* than expected, even in relatively "mundane" services such as data center, end-user computing, and helpdesk. This suggests that reputation and "brand" are more important to clients than our analysis suggests. Empathy, perhaps the most difficult attribute for respondents to assess, never shows up as a driver of client satisfaction. Overall,

---

[5]Since all variables are measured on identical seven-point scales, and the standard error is almost the same (between 0.1 and 0.3 scale units) across the five regression equations, the regression coefficients are indicative of relative effect size: how much client satisfaction would increase if the relevant service attribute were to rise by one unit.

[6] A VIF of 10 means that 10% of the variance in a predictor is unique, i.e., unexplained by other predictor variables.

we suggest that the TCE explanation for variation across services (in terms of drivers of client satisfaction) holds up reasonably well, except for under-estimating the role of assurance and over-estimating that of responsiveness. We plan to run our analysis again using quantitative (survey) data to characterize the services and it is possible that the pattern of agreement between predictions and observed results might change after we analyze the additional data.

6. NEXT STEPS

For presentation at ICIS, we plan to collect survey data on service characteristics (frequency, uncertainty, asset-specificity) from a sample of account managers in the vendor firm. This will enable us to re-generate our predictions for critical success factors in the different services and test them against our results from regression analysis.

Beyond this, we plan to examine how the processes underlying service delivery may be managed more effectively by service providers. To this end, we have already collected substantial qualitative feedback from clients about the common sources of their dissatisfaction as well as their suggestions for improvement.

7   CONTRIBUTIONS

On the theoretical front, our study relates the qualities of service transactions to the dimensions of service quality. If we are successful in predicting critical success factors from the TCE characterization of services, we would have significantly improved our understanding of service quality using the existing set of constructs (TCE and SERVQUAL). By focusing on the "micro" characteristics of service transactions as a basis for service quality, this paper complements prior work in IS outsourcing that bases outsourcing decisions on "macro" criteria such as business value, economic efficiency, and technological maturity (Rao, Nam, and Chaudhury 1996).

In terms of practical usefulness, we believe our study enhances the understanding of "successful" outsourcing relationships: knowledge of the drivers of client satisfaction for a particular service benefits both vendors and client organizations. The client can actively seek out vendors with strengths in the service attributes likely to prove critical, while the vendor can pay special attention to the attributes that are likely to impact client satisfaction the most.

8. REFERENCES

DeLone, W. H., and McLean, E. R. "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research* (3:1), 1992, pp. 60-95.

Kettinger, W. J., and Lee, C. C. "Pragmatic Perspectives on the Measurement of Information Systems Quality," *MIS Quarterly*, June 1997, pp. 223-240.

Lacity, M. C.; Willcocks, L. P.; and Feeny, D. F. "The Value of Selective IT Sourcing," *Sloan Management Review*, Spring 1996, pp. 13-25.

Parasuraman, A.; Zeithaml, V. A.; and Berry, L. L. "A Conceptual Model of Service Quality and Its Implications for Future Research," *Journal of Marketing* (49:4), 1985, pp. 41-50.

Pitt, L. F.; Watson, R. T.; and Kavan, C. B. "Measuring Information Systems Service Quality: Concerns for a Complete Canvas," *MIS Quarterly*, June 1997, pp. 209-221.

Rao, H. R.; Nam, K.; and Chaudhury, A. "Information Systems Outsourcing," *Communications of the ACM* (39:7), 1996, pp. 27-28.

Van Dyke, T. P.; Kappelman, L. A.; and Prybutok, V. R. "Measuring Information Systems Service Quality: Concerns on the Use of the SERVQUAL Questionnaire," *MIS Quarterly*, June 1997, pp. 195-208.

Williamson, O. E. *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: The Free Press, 1975.

Williamson, O. E. *The Economic Institutions of Capitalism*, New York: The Free Press, 1985.

Zeithaml, V. A.; Parasuraman, A.; and Berry, L. *Delivering Quality Service: Balancing Customer Perceptions and Expectations*, New York: The Free Press, 1990.

Zeithaml, V. A.; Parasuraman, A.; and Berry, L. "The Nature and Determinant of Customer Expectation of Service Quality," *Journal of the Academy of Marketing Science* (21:1), 1993, pp. 1-12.