

The Effect of Information System Service Quality on User Satisfaction: Evidence from a Telkomsel Retail Outlet

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ABSTRACT: *This study examines the effect of information system service quality, comprising reliability, responsiveness, assurance, and empathy, on user satisfaction among employees of a Telkomsel retail outlet in Surabaya, Indonesia, and identifies which of the four dimensions has the strongest individual effect. Primary data were collected through a questionnaire administered to all 35 employees of the outlet, selected through purposive sampling based on computer based information system use and tenure of two to five years, and analyzed using multiple linear regression. All instruments were valid and reliable, and the classical assumption tests indicated the regression model was free of multivariate outliers, non normality, multicollinearity, autocorrelation, and heteroscedasticity. The results show that reliability, responsiveness, assurance, and empathy jointly have a significant effect on user satisfaction, explaining about 35 percent of its variance. However, when tested individually, only empathy has a significant effect on user satisfaction, while reliability, responsiveness, and assurance do not, so the hypothesis that reliability is the dominant dimension is not supported. These findings suggest that, in this setting, the interpersonal and attentive aspects of service quality matter more for user satisfaction than the accuracy, responsiveness, or assurance dimensions considered individually.*

Keywords: *Information System Service Quality, Reliability, Responsiveness, Assurance, Empathy, User Satisfaction.*

INTRODUCTION

The business environment has become increasingly complex and volatile as advances in communication, transportation, and technology intensify competition across national borders, pushing organizations to pursue continuous improvement through practices such as business process reengineering, business alliances, and more creative and innovative decision making. Information technology has become an enabler of these practices, providing the communication and coordination organizations need to operate in a global economy, and it now functions not only as a support activity but as a source of competitive advantage.

As information needs grow, the way organizations handle information deserves close attention, since the volume of data and the demand for accurate and timely decisions have both increased substantially. Managers once relied on manual information handling, using paper based records that were slow to produce and whose accuracy could not be fully guaranteed because of the risk of human error, and delays or inaccuracies in information tend to hinder decision making and weaken operational control, which in turn can reduce user satisfaction. The introduction of computers addressed much of this problem by allowing transactions to be processed and distributed across related components of a system automatically, so that information could be produced quickly and in a form suited to the needs of its users.

Whether an information system succeeds is not a straightforward question, since individuals with different decision styles can reasonably hold different opinions about the value or effectiveness of a given system. Commonly used indicators of success fall into two broad categories, economic outcomes such as increased profit, and personal outcomes such as user satisfaction and system usage that are not directly

tied to profit but remain essential for judging whether a system meets the needs of the people who rely on it every day.

A preliminary survey conducted among sixteen employees of a Telkomsel retail outlet, Gerai Halo Telkomsel Perak in Surabaya, Indonesia, examined perceptions of the outlet's information system across five statements covering comprehension of the current system, willingness to learn it further, its usefulness for daily tasks, the company's efforts to update it, and satisfaction with the reports it produces. Comparing each respondent's total score against the group average showed eleven respondents scoring below average and only five scoring above it, an early indication that user satisfaction with the outlet's information system was relatively low. This pattern appeared to reflect a combination of factors, including budget constraints that limited the outlet's ability to keep pace with advancing computer technology, and variation among staff, related to age, educational background, and willingness to learn, in how fully they had mastered the systems already in place, both of which can affect user satisfaction and the perceived quality of the information produced.

Building on this background, the present study investigates the effect of information system service quality, understood through the four dimensions of reliability, responsiveness, assurance, and empathy, on user satisfaction at Gerai Halo Telkomsel Perak, and identifies which of the four dimensions exerts the strongest individual effect. The reasoning is that a computerized process capable of producing information quickly cannot, on its own, produce information that is genuinely accurate and useful unless it is also supported by capable staff and adequate facilities, and the paper accordingly asks two research questions: whether information system service quality, comprising reliability, responsiveness, assurance, and empathy, has a significant effect on user satisfaction, and which of these four dimensions has the most dominant effect on user satisfaction. Correspondingly, H1 proposes that information system service quality, comprising reliability, responsiveness, assurance, and empathy, has a significant effect on user satisfaction, and H2 proposes that reliability is the dimension with the most dominant effect on user satisfaction.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Information System Service Quality

Service quality in an information system context concerns how well the department or unit responsible for producing information meets the expectations of the people who rely on that information for their work. Parasuraman, Zeithaml, and Berry (1988) propose that service quality can be assessed along five dimensions, reliability, responsiveness, assurance, empathy, and tangibles, a framework widely adopted in information systems research because it captures both the technical accuracy of a system and the interpersonal quality of the service surrounding it. The present study draws on the first four of these dimensions, reliability, responsiveness, assurance, and empathy, as its independent variables, consistent with the scope of the underlying data collected at the study site, while tangibles, covering the physical facilities, equipment, and communication materials associated with the information system, is left for future research to incorporate.

Reliability and User Satisfaction

Reliability refers to the ability to deliver the promised service accurately, dependably, and to the satisfaction of the people who use it. Martin and colleagues, as discussed in the underlying thesis, view an information system itself as a service organization, so that user satisfaction becomes a central measure of whether the system succeeds, since it is more readily observed than any direct economic outcome and shapes users' willingness to cooperate with information system staff and to trust the information the system produces. Classical management theory, associated with Fayol, Taylor, Gulick, Urwick, and Mooney and summarized by Murdick, Ross, and Claggett (1984), holds that clear lines of authority, appropriate specialization of work, unity of command, a defined span of control, and a clear separation between line and staff functions together support the production of accurate information and, through it, user satisfaction. Applied to reliability, this theory implies that when an information system unit is organized along these classical principles, the reports and services it produces are more likely to be dependable and to satisfy the people who use them.

Responsiveness and User Satisfaction

Responsiveness refers to the willingness of information system staff to assist users and to provide service promptly when problems or requests arise. Skinner's (1938) theory of operant conditioning holds that behavior followed by a satisfying consequence tends to be repeated, while behavior followed by an unpleasant consequence tends not to be repeated, so that an individual's future behavior can be anticipated from the consequences that behavior has produced in the past. Applied to responsiveness, this theory implies that when users receive a positive consequence, such as prompt and helpful assistance, in response to raising an information need, they are more likely to continue engaging constructively with the information system and its staff, whereas an unhelpful or dismissive response tends to discourage users from seeking help in the future. This suggests that rewarding responsive staff behavior, rather than relying on punishment for unresponsive behavior, is the more effective way to build the kind of responsiveness that supports user satisfaction.

Assurance and User Satisfaction

Assurance covers the knowledge, competence, courtesy, and trustworthiness of information system staff, and the corresponding freedom from danger, risk, or doubt that users experience when relying on the information those staff provide. Litwak's (1961) professional theory holds that an organization able to expand and develop the specialization of its human resources, for example through broader education and training for its members, is better able to resolve organizational problems in a professional and flexible manner and thereby achieve stronger performance. Applied to assurance, this theory implies that information system staff whose knowledge and skill are strengthened through education and training are better positioned to produce information that users can trust, free of the risk or doubt that would otherwise undermine satisfaction.

Empathy and User Satisfaction

Empathy covers the ease of establishing a relationship, the quality of communication, and the personal attention given to the individual needs of the people an information system serves. DeLone and McLean (1992) propose that information systems success can be understood through six related categories, system quality, information quality, use, user satisfaction, individual impact, and organizational impact, a model that treats user satisfaction as one of the central outcomes through which the broader success of an information system can be judged. Applied to empathy, this model implies that the personal attention and quality of interaction users experience when dealing with information system staff feed directly into their satisfaction with the system, alongside the more technical outcomes captured by system and information quality.

Theories of Satisfaction and Motivation Underlying the Model

Several general theories of motivation and satisfaction, beyond the dimension specific theories described above, support the expectation that service quality dimensions of this kind shape user satisfaction. Herzberg's (1968) two factor theory distinguishes hygiene factors, whose absence tends to produce dissatisfaction, from motivator factors, whose presence tends to produce satisfaction, and situates service related conditions, such as the quality of interpersonal relationships between staff and the people they serve, among the factors capable of shaping how satisfied or dissatisfied a person feels. Vroom's (1964) expectancy theory holds that people are motivated to act when they expect that greater effort will lead to a valued outcome, implying that users who expect capable and attentive information system service to produce a favorable result are more likely to engage with that service in ways that ultimately support their own satisfaction. Maslow's (1943) theory of human motivation similarly emphasizes that behavior is driven by the pursuit of internal needs, so that information system service capable of meeting a user's functional and interpersonal needs is more likely to be experienced as satisfying. Finally, Oliver's (1980) cognitive model of satisfaction describes satisfaction as arising from the comparison between a person's expectations and their perception of actual performance, providing the general theoretical basis for treating user satisfaction, in this study, as the favorable or unfavorable feeling that follows from comparing the information and service a user receives against what that user expected.

Taken together, these dimension specific and general theories support the expectation that reliability, responsiveness, assurance, and empathy, considered jointly, shape user satisfaction with an information system, and that reliability, as the dimension most directly concerned with the accuracy and dependability

of the information itself, is likely to be the most influential of the four taken individually. On this basis, the study proposes the following hypotheses.

H1: Information system service quality, comprising reliability, responsiveness, assurance, and empathy, has a significant effect on user satisfaction.

H2: Reliability is the information system service quality dimension with the most dominant effect on user satisfaction.

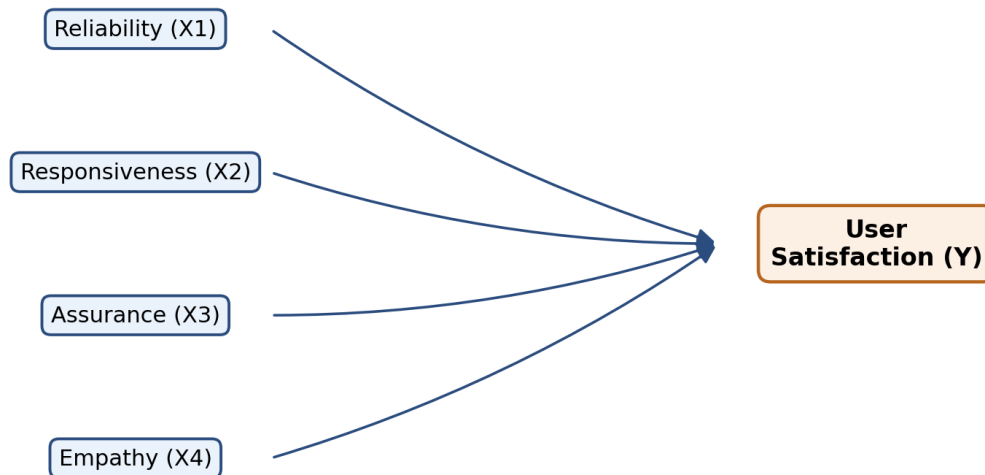


Figure 1. Conceptual Framework

METHOD

Variables and Measurement

The dependent variable in this study is user satisfaction (Y), and the independent variables are the four information system service quality dimensions of reliability (X1), responsiveness (X2), assurance (X3), and empathy (X4). User satisfaction was measured with five items, and each of the four independent variables was measured with four items, all adapted from an instrument used in prior local research on information system user satisfaction. Every item used a seven point semantic differential scale, on which respondents rated each statement from 1, indicating strong disagreement, to 7, indicating strong agreement, with a rating of 4 representing a neutral or undecided response.

Population and Sample

The population consisted of the 35 employees of Gerai Halo Telkomsel Perak in Surabaya, Indonesia, spanning supervisors, staff, and employees at levels below staff. All 35 employees were included as the study sample, selected through non probability, purposive sampling using two criteria: the employee must use a computer based information system in their work, and the employee must have between two and five years of tenure, a range chosen to capture employees with enough experience to understand the system in place while still keeping pace with its ongoing technological development.

Data Collection

Primary data were collected directly from the 35 respondents through a questionnaire distributed to each employee, supplemented by direct interviews with respondents to obtain additional context relevant to their answers.

Data Analysis Technique

Instrument validity was assessed by correlating each item's score with the total score for its variable, with an item considered valid where this correlation was significant at the 0.05 level. Instrument reliability was assessed using Cronbach's Alpha compared against a critical r table value of 0.3346, computed for a two tailed 5 percent significance level with 33 degrees of freedom, with a variable considered reliable where its Cronbach's Alpha exceeded this value. Multivariate outliers were assessed using the Mahalanobis distance at the p less than 0.001 level, compared against the chi square critical value for the number of variables used in the study, and normality was assessed using the Kolmogorov Smirnov test. Classical assumption testing covered multicollinearity, assessed using the variance inflation factor, with a value below 10 indicating no multicollinearity; autocorrelation, assessed using the Durbin Watson statistic, with a value between negative 2 and positive 2 indicating no autocorrelation; and heteroscedasticity, assessed using Rank Spearman correlation between the regression residuals and each independent variable, with a significance level above 0.05 indicating no heteroscedasticity.

Hypothesis 1 was tested using multiple linear regression, following the equation Y equals b_0 plus b_1X_1 plus b_2X_2 plus b_3X_3 plus b_4X_4 plus e , where Y is user satisfaction, b_0 is the constant, b_1 through b_4 are the regression coefficients for reliability, responsiveness, assurance, and empathy respectively, and e is the error term. Model fit was assessed with the F test at a 0.05 significance level. Hypothesis 2 was tested by comparing the partial t test results for each of the four independent variables, also at a 0.05 significance level, with the dimension producing the largest significant standardized effect treated as the dominant dimension.

RESULTS AND DISCUSSION

Company Profile

Gerai Halo Telkomsel Perak functions as one of Telkomsel's customer facing outlets, focused on kartuHALO card sales and related customer service. Telkomsel introduced kartuHALO as its flagship postpaid product beginning in Medan, Surabaya, Bandung, and Denpasar before expanding to Jakarta, and later broadened the kartuHALO line with several subscription options, including a hybrid card combining postpaid and prepaid service on a single number, to let customers choose a plan that matches their communication habits. The outlet's stated aims include simplifying and speeding up card registration, serving as a service center for Telkomsel products and programs, delivering strong customer service, and expanding Telkomsel's customer base within its coverage area.

Descriptive Statistics

Responses from the 35 employees indicate a generally favorable, though not strongly positive, perception of information system service quality and user satisfaction, with a substantial share of responses clustering around the neutral midpoint of the seven point scale, as summarized in Table 1.

Table 1. Descriptive Statistics of Study Variables

Variable	Items	Share Agreeing (Scores 5-7)	General Interpretation
Reliability (X1)	4	64.2%	Respondents lean toward agreeing that the system delivers reports quickly, accurately, and in adequate detail, though a meaningful share remain neutral.
Responsiveness (X2)	4	66.4%	Respondents lean toward agreeing that staff respond helpfully and that the system serves current needs.
Assurance (X3)	4	63.5%	Respondents lean toward agreeing that staff and system knowledge are trustworthy and adequate.
Empathy (X4)	4	64.3%	Respondents lean toward agreeing that staff communicate well and attend to individual needs.
User Satisfaction (Y)	5	n/a	Satisfaction responses similarly cluster around the neutral to moderately agreeing range across the five items.

Source: Processed primary data, 2020.

Validity and Reliability

Every item across all five variables correlated significantly with its variable's total score at the 0.05 level, so all items were retained as valid, with correlation coefficients ranging from 0.422 to 0.814 across the four independent variables and the dependent variable. Reliability, assessed with Cronbach's Alpha against the critical value of 0.3346, is summarized in Table 2; every variable exceeded this threshold and was accordingly treated as reliable.

Table 2. Validity and Reliability Test Results

Variable	Item Correlation Range	Cronbach's Alpha	Reliability
Reliability (X1)	0.530 to 0.814	0.623	Reliable
Responsiveness (X2)	0.702 to 0.794	0.699	Reliable
Assurance (X3)	0.500 to 0.776	0.596	Reliable
Empathy (X4)	0.562 to 0.791	0.597	Reliable
User Satisfaction (Y)	0.422 to 0.773	0.609	Reliable

Source: Processed primary data, 2020.

Multivariate Outlier, Normality, and Classical Assumption Tests

The Mahalanobis distance across observations ranged from 1.329 to 12.725, well below the chi-square critical value of 20.515 for five variables at the 0.001 level, indicating the data contain no multivariate outliers. The Kolmogorov Smirnov test produced a significance level above 0.05 for every variable, indicating each variable is normally distributed. The variance inflation factor for each independent variable, reliability at 2.004, responsiveness at 2.386, assurance at 1.444, and empathy at 1.850, was well below the threshold of 10, indicating the regression model is free of multicollinearity. The Durbin Watson statistic for the model was 1.858, within the range of negative 2 to positive 2 that indicates no autocorrelation. Rank Spearman correlations between the regression residuals and each independent variable, reliability at negative 0.025, responsiveness at negative 0.044, assurance at negative 0.023, and empathy at 0.034, all produced significance levels above 0.05, ranging from 0.801 to 0.896, indicating the model is free of heteroscedasticity. Taken together, these results indicate the data support multiple linear regression analysis.

Multiple Regression Results

Table 3 presents the multiple linear regression results for the effect of reliability, responsiveness, assurance, and empathy on user satisfaction.

Table 3. Multiple Linear Regression Results

Variable	Regression Coefficient	t (sig.)
Constant	1.976	n/a
Reliability (X1)	0.010	0.052 (0.959)
Responsiveness (X2)	0.063	0.328 (0.746)
Assurance (X3)	0.139	0.859 (0.397)
Empathy (X4)	0.379	2.178 (0.037)

Source: Processed primary data, 2026.

The resulting regression equation is $Y = 1.976 + 0.010 X_1 + 0.063 X_2 + 0.139 X_3 + 0.379 X_4$. All four coefficients are positive, indicating that an increase in any of the four service quality dimensions is associated with an increase in user satisfaction when the other three dimensions are held constant, though, as the t test results in Table 3 show, only the coefficient for empathy reaches statistical significance at the 0.05 level.

Model Fit and Coefficient of Determination

The F test produced an F value of 3.960 with a significance level of 0.011, below the 0.05 threshold, indicating the overall regression model is a good fit for explaining the joint effect of reliability, responsiveness, assurance, and empathy on user satisfaction. The coefficient of determination (R squared) was 0.346, indicating the four independent variables jointly explain about 34.6 percent of the variance in user satisfaction, with the remaining 65.4 percent explained by factors outside the model. The multiple

correlation coefficient (R) was 0.588, indicating a moderate overall relationship between the four service quality dimensions and user satisfaction.

Hypothesis Testing

Table 4 summarizes the partial t test results used to test Hypothesis 2, alongside the F test result used to test Hypothesis 1.

Table 4. Hypothesis Testing Summary

Hypothesis	Test	Result	Conclusion
H1: Reliability, responsiveness, assurance, and empathy jointly affect user satisfaction	F-test	F = 3.960, sig. = 0.011	Supported
H2: Reliability is the dominant dimension affecting user satisfaction	Partial t-test	Only empathy is significant (t = 2.178, sig. = 0.037); reliability is the weakest, not the strongest, predictor (t = 0.052, sig. = 0.959)	Not supported

Source: Processed primary data, 2020 (SPSS output).

Hypothesis 1, that reliability, responsiveness, assurance, and empathy jointly have a significant effect on user satisfaction, is supported by the F test result above. This finding is broadly consistent with the service quality and information systems success literature reviewed earlier, which treats these dimensions as jointly relevant to how satisfied users feel about the information and service they receive (Parasuraman et al., 1988; DeLone & McLean, 1992).

Hypothesis 2, that reliability is the dominant dimension affecting user satisfaction, is not supported. The partial t test results in Table 3 show that reliability, responsiveness, and assurance each fail to reach significance at the 0.05 level, with reliability in fact producing the weakest and least significant coefficient of the four, while empathy is the only dimension with a statistically significant individual effect on user satisfaction. Employees' own responses help explain why reliability did not emerge as significant: 45.7 percent of respondents gave a neutral rating of 4 to the statement that reports are produced quickly, suggesting persistent doubt about whether the outlet's computer system consistently produces timely reports, doubt plausibly related to the system not yet being used to its full potential and to variation among employees in how well they have mastered it. Similarly, sizable shares of respondents rated the responsiveness and assurance items neutrally, at 4, rather than favorably, consistent with the underlying uncertainty these two dimensions also failed to translate into a significant individual effect on satisfaction.

That empathy alone reached significance suggests that, at this outlet, user satisfaction depends less on the strict accuracy or speed of the information produced, the concerns most closely associated with reliability, and more on how well staff build relationships with users, communicate clearly, and attend to individual needs, the concerns captured by empathy. This pattern is consistent with Herzberg's (1968) two factor theory, in which the quality of interpersonal relationships functions as a factor capable of shaping satisfaction quite apart from the more technical, task related aspects of the service being delivered, and with DeLone and McLean's (1992) view of user satisfaction as an outcome shaped by more than system quality alone. It is worth noting that this pattern is not uniform across the wider literature on information system service quality, since some earlier studies in this research stream have reported that all four dimensions matter jointly and individually, while others have reported, as this study does, that reliability alone does not exert a significant individual effect once the other dimensions are accounted for; this divergence points to the value of examining service quality effects separately in each organizational setting rather than assuming a single dimension will dominate universally.

CONCLUSION

This study examined the effect of information system service quality, comprising reliability, responsiveness, assurance, and empathy, on user satisfaction among the 35 employees of Gerai Halo Telkomsel Perak in Surabaya, Indonesia. The four dimensions were found to have a significant joint effect on user satisfaction, explaining about 34.6 percent of its variance, supporting Hypothesis 1. However, when tested individually,

only empathy had a significant effect on user satisfaction, while reliability, responsiveness, and assurance did not, so Hypothesis 2, that reliability is the dominant dimension, was not supported.

For Gerai Halo Telkomsel Perak, these findings suggest that management should give particular attention to strengthening the interpersonal and attentive qualities of staff service captured by empathy, such as clear communication and genuine attention to individual customer and employee needs, while continuing to invest in the more technical dimensions of reliability, responsiveness, and assurance, since these remain part of a jointly significant model even though none of the three reached individual significance in this sample. Improving employees' familiarity and comfort with the outlet's computer based information system, given the substantial share of neutral responses on the reliability items, may also help convert the outlet's existing system investment into a more clearly felt improvement in user satisfaction.

This study has several limitations. Data were collected through a single, self reported questionnaire, so responses reflect employees' perceptions rather than independently verified system performance, and situational factors at the time employees completed the questionnaire may have influenced their answers. The four dimensions examined jointly explain only about 34.6 percent of the variance in user satisfaction, leaving the majority of that variance attributable to factors outside the model, and the study was conducted at a single outlet with a modest sample of 35 employees, which limits how far these findings can be generalized. Future research could extend this design by adding the tangibles dimension of service quality, drawing on a larger sample, and examining other, larger organizations that rely more extensively on information systems, to test whether the pattern observed here, in which empathy rather than reliability emerges as the dominant predictor of user satisfaction, holds more broadly.

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