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William Kettinger
University of South Carolina

Choong Lee
Salisbury State University

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“ZONING-IN” ON INFORMATION SYSTEMS SERVICE QUALITY: CONTINUOUS REFINEMENT OF THE SERVQUAL MEASUREMENT

William J. Kettinger
Center for Information Management and Technology Research
University of South Carolina

Choong C. Lee
Franklin P. Perdue School of Business
Salisbury State University

Abstract

Considerable debate in marketing has challenged the conceptual and psychometric properties of the SERVQUAL measure of service quality and drawn into question the instrument’s practical value. One of the most noticeable outcomes of this debate has been the development and testing of an improved SERVQUAL instrument by Parasuraman, Zeithaml, and Berry (1994b). This new scale, SERVQUAL+, demonstrates improved validity and addresses many of the critics’ concerns related to the original SERVQUAL. The new scales are reported to clarify the relationships among different standards of expectations and perceived service quality. The underlying model of SERVQUAL+ posits that service expectations exist at two levels which customers use as standards in assessing service quality: (1) desired service: the level of service representing a blend of what customers believe “can be” and “should be” provided, and (2) adequate service: the minimum level of service customers are willing to accept. Separating these two levels is a “zone of tolerance” that represents the range of service performance a customer would consider satisfactory. This study will adapt the SERVQUAL+ measurement to the IS setting, confirm its psychometric validity and evaluate the practical value of its “zone of tolerance” concept.

1. RESEARCH INTRODUCTION

Recognizing the need to more comprehensively measure information services (IS) quality, Kettinger and Lee (1994) introduced the widely studied SERVQUAL service quality measure from marketing as a possible enhancement to the existing user information satisfaction measure. Pitt et al. (1995) further extended the application of SERVQUAL in IS by independently testing SERVQUAL’s reliability and validity in samples from three different organizations.

Interestingly, while these papers adapting SERVQUAL to the IS context were slowly working their way through the IS review process in the early 1990s, a vigorous debate was taking seed in the marketing field concerning the conceptual and empirical integrity of this popular instrument. Recently, critics have pointed out conceptual and empirical difficulties with the original SERVQUAL instrument and suggest that alternatives to the original “gap scored” IS-adapted SERVQUAL should be used (Van Dyke et al. 1997).

As a result of the debate in marketing, important contributions have been made by Zeithaml et al. (1993) and by Parasuraman et al. (1994b). In these studies, they proposed and tested three alternative service quality measures in
a effort to improve the original version of their SERVQUAL scale. The new measures include a one-column SERVQUAL format, a two-column SERVQUAL format, and finally, a three-column format with side-by-side scales, which is referred to here as SERVQUAL+.

We believe that the Parasuraman et al. (1994b) new “SERVQUAL+” measure, and its associated “zones of tolerance,” have the potential to overcome cited problems with the original SERVQUAL measure, and provide practical value as a diagnostics tool in the IS setting. In order to examine the psychometric superiority of SERVQUAL+ over their original version of SERVQUAL, this study will adapt the SERVQUAL+ to the IS setting, confirm its psychometric validity, evaluate its practical value, and compare it with existing IS-adapted SERVQUAL instruments, such as Kettinger and Lee (1994) and Pitt et al.

2. THE SERVQUAL INSTRUMENT FROM MARKETING

The SERVQUAL instrument was originally developed by Parasuraman et al. (1988). This 22-item measure has also been the focus of considerable marketing research. The scale was designed for application to a broad spectrum of services (including the intra-firm context), and through its expectations/perceptions format (encompassing statements for each of the five service quality dimensions) can be adapted to fit specific research needs of a particular organization. On the basis of multiple samples and studies, a 22-item scale was derived consisting of five service quality dimensions including (1) tangibles (TANG-SQ): the appearance of physical facilities, equipment, personnel, and communication materials; (2) reliability (REL-SQ): the ability to perform the promised service dependably and accurately; (3) responsiveness (RESP-SQ): the willingness to help customers and to provide prompt service; (4) assurance (ASSU-SQ): the knowledge and courtesy of employees and their ability to convey trust and confidence; and (5) empathy (EMP-SQ): the provision of caring, individualized attention to customers (Parasuraman et al. 1988 1991).

SERVQUAL has been widely used in both proprietary and published marketing research and there is a growing literature critiquing its use (e.g., Cronin and Taylor 1992; Teas 1993). While not all of these studies have formally examined the scale’s psychometric properties, several studies have done so (Babakus and Boller 1992; Brensinger and Lambert 1990; Carman 1990; Finn and Lamb 1991). The primary focus of criticism has been directed at SERVQUAL’s difference-score (i.e., perceptions minus expectations) conceptualization. Several marketing studies cite conceptual and empirical difficulties with the original SERVQUAL instrument and suggest that alternatives to the original “gap scored” SERVQUAL should be used (e.g., Cronin and Taylor 1992; Teas 1993). These researchers indicate that SERVQUAL’s discriminant validity has not been confirmed, with several studies showing items loading on different dimensions, and the number of factors and items retained has not been consistent across studies.

3. SERVQUAL AND IS SERVICE QUALITY

Over the past five years, the IS field has looked to the marketing reference discipline for its experience in measuring quality of services. Recognizing its potential as a diagnostic tool to enhance IS effectiveness, Kettinger and Lee (1994) established an IS-adapted SERVQUAL short form (13 items) with strong validity for four of the Parasuraman et al. (1991) SERVQUAL dimensions, but reserved claims of external validity because their study was a single sample test. Pitt et al. independently analyzed SERVQUAL data from three different sample sites using principal components and maximum likelihood methods deriving a three, five and seven factor solution, respectively. Given their findings, Pitt et al. report that “SERVQUAL does not clearly delineate among the dimensions of service quality” (p. 181). They warn users of the 22-item SERVQUAL to be aware of the coalignment of the dimensions of responsiveness, assurance, and empathy due to the semantical similarity of these concepts and indicate that the reliability of the tangible dimension is low.
Critics generally contend that ambiguity of SERVQUAL’s expectation construct and its gap measurement approach contribute to the measure’s poor performance in establishing discriminant validity for the proposed five factor structure (Van Dyke et al. 1997). In a recent study, Kettinger and Lee (1997) conducted an empirical comparison between SERVQUAL and SERVPERF (SERVQUAL using only perceived scores—no gap measure) in terms of the psychometric superiority in the IS setting. Interestingly it shows very similar results to the results of Parasuraman et al. (1994a). That is, while slightly better reliability and explained variance were noticed with the SERVPERF measure, neither SERVQUAL nor SERVPERF data fits well enough to hold a model of the proposed five factor structure.

4. MOVING BEYOND THE SERVQUAL DEBATE

Since the introduction of the original SERVQUAL to IS, important work has transpired in marketing to better understand and improve the operationalization of SERVQUAL’s expectation construct(s). The most important contributions in this regard are the works of Zeithaml et al. and Parasuraman et al. (1994b). In these studies, they acknowledge that their original “definition of expectation construct was broad and general, and did not stipulate norms of expectations used by customers in assessing quality” (Zeithaml et al. 1993, p. 3).

They posit that service expectations exist at two levels that customers use as comparison standards in assessing service quality: (1) desired service: the level of service representing a blend of what customers believe “can be” and
“should be” provided; and (2) adequate service: the minimum level of service customers are willing to accept. Separating these two levels is a “zone of tolerance” that represents the range of service performance a customer would consider satisfactory. In other words, customer’s service expectations are characterized by a range of levels (between desired and adequate service), rather than a single pointer (see Figure 1). By providing precise information about the perceived service levels across dimensions relative to adequate and desired service levels, insight is gained concerning the amount of emphasis that should be placed on improving poorly evaluated dimensions.

Clearly, the concept of tolerance zones has the potential to overcome many of the complaints concerning the ambiguity of the SERVQUAL’s gap measure. In addition, this “desired” expectation (d), “adequate” expectation (a), and “perceived” service (p) format, SERVQUAL+, has strong practitioner appeal to improve IS service quality diagnostics. IS service providers may formulate a service improvement plan based on this zone of tolerance concept. Depending on the relative position of the perceived service pointer (within or outside of the zone) for each of the different dimensions, short-term and long-term quality improvement resource allocation plans can be prescribed. In the short-term, any dimension with a perceived pointer outside of the zone would be a service dimension requiring utmost attention. When all the pointers are within the zones, the relative positioning of pointer and the width of zone itself are criteria for consideration in deriving long-term IS service improvement planing.

Incorporating concepts described above, Parasuraman et al. (1994b) proposed and tested three alternative service quality measures: (1) SERVQUAL+, which has a three-column format generating separate ratings of desired, adequate, and perceived service with three identical, side-by-side scales (SERVQUAL+’s operationalization is the most similar to that of the original SERVQUAL); (2) a two-column format which generates direct ratings of the gap between desired and perceived service, and the gap between perceived and adequate services; and (3) a one-column format which measures direct ratings of the gap between desired service and perceived service level (see Figure 2). While the basic content and structure of the original SERVQUAL instrument remained intact, a few major revisions and refinements were made.

Their findings based on psychometric testing on these measurements show very exciting results, which overcome the weaknesses of the original SERVQUAL instrument. While all three formats of instruments show strong validity and reliability of the scales, Parasuraman et al. (1994b) conclude that the three-column format is superior as a managerial diagnostic tool, providing detailed and accurate data to determine service deficiencies and to initiate appropriate improvement efforts. These recent developments illustrate the potential and need for continuous improvement to the IS-adapted service quality measure.

5. RESEARCH OBJECTIVES AND QUESTIONS

Recent research findings from marketing lead to the examination of the following questions concerning the validity of SERVQUAL+ in the IS setting.

1. Adaptation of SERVQUAL+ in the IS setting
   • Is the IS-adapted SERVQUAL+ psychometrically valid?
   • Is the IS-adapted SERVQUAL+ superior to existing IS-adapted SERVQUAL measures in terms of psychometric properties?

2. Practicality of SERVQUAL+ in the IS setting
   • Is the “zone of tolerance” concept practically applied to the IS setting?
   • Is the “zone of tolerance” concept better than a single pointer approach in diagnosing IS service problems?
   • How can it best be used as a diagnostic tool?
Continuous Refinement of the SERVQUAL Measurement

Three-Column Format (SERVQUAL+)

<table>
<thead>
<tr>
<th>My Minimum Service Level is:</th>
<th>My Desired Service Level is:</th>
<th>My Perception of ___’s Service Performance is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
</tbody>
</table>

Two-Column Format

<table>
<thead>
<tr>
<th>Compared to My Minimum Service Level, ___’s Service Performance is:</th>
<th>Compared to My Desired Service Level, ___’s Service Performance is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower The Same Higher No Opinion</td>
<td>Lower The Same Higher No Opinion</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9</td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
</tbody>
</table>

One-Column Format

<table>
<thead>
<tr>
<th>Lower Than My Desired Service level</th>
<th>The Same As My Desired Service level</th>
<th>Higher Than My Desired Service level</th>
<th>No Opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td>N</td>
</tr>
</tbody>
</table>

Figure 2. Alternative Service Quality Measurement Formats  
(Adapted from Parasuraman et al. 1994b)

In order to address these questions, it is imperative that the SERVQUAL+ be tested in the IS setting as early as possible.

These questions will be addressed by the researchers by adapting the SERVQUAL+ measure from marketing to the IS setting. The revised IS version will be subjected to various psychometric testing concerning its reliability and construct validity. This will be accomplished by using the following methodological approach.

6. RESEARCH METHODOLOGY

The IS adapted SERVQUAL+ will be pilot tested through a series of interviews with a group of university-based computer users. The IS adapted SERVQUAL+ will then be refined based on the pilot test results. The researchers will next pre-test the refined instrument at two major universities in the eastern United States. The data will be analyzed based on predefined statistical research methods as outlined below. After considering possible problems or limitations with the overall research methodology, the researchers will proceed to conduct their main data collection and analysis.
The refined instrument will be administered in at least three other sample sites (at least one service, one manufacturing, and one non-profit organization) in the United States. The researchers will use anonymous and self-administered questionnaires. The researchers will be available on-site to distribute, supervise, and collect questionnaires. Subjects will be able to complete the questionnaire on their own free time and return it to the researchers at a later point. The total number of valid questionnaires should exceed a minimum of 200 IS users from each organization with the total number of respondents exceeding 600. Targeted respondents will be typical or ‘every day’ users of each firm’s IS service function.

In an effort to establish the validity and reliability of the measure, a second-order factor analysis will be used to derive a model from one sample site. The derived model will be then subjected to a multiple-group analysis to cross-validate the measurement validity in the other samples. This type of analysis allows simultaneous factor comparisons between two or more samples by testing the invariance between them. To derive a more practical instrument with more parsimonious distinction between the five original dimensions, the instrument might need to be further refined by detecting and correcting specification errors (Andersen and Gerbing 1988; MacCallum 1986).

7. CURRENT STATUS OF THE PROJECT AND FUTURE PROJECT IMPLEMENTATION

The theoretical background and research approach for this study has been fully formulated in written form. The IS-adapted SERVQUAL+ instrument has been prepared. The IS-adapted instrument has been piloted. The piloted instrument will be administered to the two university sites in October 1997. Analysis of results from the two pretest organizations will take place in November 1997 and initial findings of the study will be presented at the conference. The full-scale implementation of the refined questionnaires will take place in late 1997.

8. REFERENCES


Continuous Refinement of the SERVQUAL Measurement


