So which score on the LibQual+™ tells me if library users are satisfied?

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Abstract

Scores on the LibQual+™, a standardized measure of academic library service quality grounded in Expectation Confirmation–Disconfirmation theory, were analyzed to determine whether the perceived score, a direct rating of service quality, is a more valid indicator of user satisfaction than the superiority gap score, which is the simple difference between the perceived performance rating assigned to the service and a desired level of performance. According to the theory underlying the LibQual+™, the score with the highest correlations to eight validity indicators should have been the superiority gap score, but this study found that the perceived score is a better predictor of satisfaction than the superiority gap score. Once the perceived rating is partialled-out from the correlation between the superiority gap score and the validity criterion, the value of the gap score becomes almost nil. The data call into question the use of the superiority gap score to infer satisfaction.
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1. Introduction

Customer satisfaction, generally defined as the post-consumption evaluation of a product or a service (Yuksel & Rimmington, 1998), is essential to successful marketing because satisfied customers are more likely to show loyalty and to spread positive word-of-mouth

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recommendations (Hennig-Thurau & Klee, 1997; Kasper, 1988; Martensen & Gronholdt, 2003; Oliver, 1999). Consequently, the measurement of customer satisfaction has been the focal point in most service organizations' marketing research programs, although in academic libraries the need for gauging customer satisfaction (rather than holdings, budgets, expenditures, and staff size) as a relevant measure of quality has been recognized rather recently (Nitecki, 1996; Nitecki & Franklin, 1999). Since then, considerable effort has gone into identifying relevant service dimensions and developing appropriate rating formats to measure quality and customer satisfaction with such services (Andaleeb & Simmonds, 1998; Calvert & Cullen, 1994; Calvert & Hernon, 1997; Coleman, Xiao, Blair, & Chollet, 1997; Cook & Thompson, 2000; Hernon & Altman, 1998; Hernon & Calvert, 1996; Hernon & Nitecki, 2001; Hernon, Nitecki, & Altman, 1999; Martensen & Gronholdt, 2003; Matthews, 2003; Millson-Martula & Menon, 1995; Murfin & Gugelchuk, 1990; Nitecki & Franklin, 1999; Niyonsenga & Bizimana, 1996; Shi, Holahan, & Jurkat, 2004; Simmonds & Andaleeb, 2001; White & Abels, 1995).

2. Service quality versus satisfaction: The same or different constructs?

Hernon and Nitecki (2001) point out that in some evaluations of libraries, the concepts of quality and satisfaction are used interchangeably (e.g., Andaleeb & Simmonds, 1998), even though the two are not necessarily the same (Nitecki & Franklin, 1999). However, there is no consensus regarding definitions of these two concepts and whether they should be treated as a single construct or two distinct constructs (Athiyaman, 1997; Hernon et al., 1999; Elliot, 1995; Nitecki & Franklin, 1999; Nitecki & Hernon, 2000; White & Abels, 1995). Not surprisingly, for customers, the differences between service quality and satisfaction are frequently blurred (Iacobucci, Ostrom, & Grayson, 1995). Sometimes instruments meant to measure service quality are actually better measures of satisfaction (Van Dyke, Prybutok, & Kappelman, 1999).

Some academics contend that satisfaction is transaction specific, whereas service quality is the cumulative evaluation of multiple transactions over time (Parasuraman, Zeithaml, & Berry, 1985), but others (Teas, 1993a) maintain that service quality judgments are also transaction specific. It has also been argued that evaluations of service quality are more cognitive in nature than evaluations of satisfaction, which includes emotional factors (Liljander & Strandvik, 1997), but this distinction too is debatable. Other proposed differences include the notion that service quality is only concerned with issues of quality, whereas satisfaction may involve such non-quality matters as price. However, as noted by Hellofs and Jacobson (1999), perceived quality decreases as market share for a product rises, so perceptions of quality also occur within some context. Opinions also differ about which construct is the antecedent of the other, although the preponderance of evidence seems to point to service quality as the precursor of satisfaction (Cronin & Taylor, 1992; Gotlieb, Grewal, & Brown, 1994; Iacobucci et al., 1995; Spreng, MacKenzie, & Olshavsky, 1996; Spreng & Mackoy, 1996; Taylor & Baker, 1994).

According to Hernon and Nitecki (2001), service quality and customer satisfaction can be ends in themselves and each is therefore worth examining in its own right. However, from the perspective of customer loyalty, assessing customer satisfaction is more critical than measuring service quality, given that service quality is the antecedent of satisfaction, and that satisfaction plays a greater role in repurchase intentions than service quality (Cronin & Taylor, 1992). Although today customer satisfaction has come to be recognized as a necessary but not sufficient condition for customer repurchasing (Jones & Sasser, 1995), assuring customer satisfaction remains a goal in most organizations, including libraries.

3. The LibQual+™ project

In 1999, a major project to develop a standardized measure of library service quality was undertaken by the Association of Research Libraries (ARL) in collaboration with Texas A&M University. The result of this project is an instrument named LibQual+™, which measures library users' evaluations of service quality on four dimensions: Affect of Service, Library as Place, Personal Control, and Access to Information. Currently in the last phase of the refinement process, the final version of LibQual+™ is slated to become an established, ongoing assessment procedure for ARL-associated libraries.

An explanation of the LibQual+™ measurement system and its theoretical underpinnings may be found in Thompson, Cook, and Heath (2000) as well as the Web site devoted to it (http://www.libqual.org). The model guiding the development of LibQual+™, based primarily on the work of Parasuraman et al. (1985, 1988, 1994), is Expectation Confirmation–Disconfirmation theory. According to this theory, customers have some standard(s) or expectation(s) in their minds before making a purchase. After buying the product or service, the performance of the product or service is compared to this pre-purchase standard. If performance exceeds the pre-purchase standard, a positive disconfirmation occurs, which in turn leads to satisfaction. If performance falls below the pre-purchase standard, it results in a negative disconfirmation, which creates dissatisfaction. In the case where performance matches expectations, confirmation occurs, and this leads to indifference (moderate satisfaction). In other words, the level of satisfaction a customer experiences is a function of the direction and magnitude of disconfirmation (Oliver, 1977, 1980).

Based on this paradigm, customer satisfaction constitutes the "gap" (i.e., difference) between the service a customer expects to receive and the service that she or he actually experiences. Thus, on each item of the LibQual+™ questionnaire, the respondent provides three ratings of library service: (a) minimum acceptable level of service, (b) desired (i.e., expected) level of service, and (c) the perceived (i.e., currently provided) level of service. By subtraction, gaps are calculated between desired, perceived, and minimum expectations of service. The gap between the desired and the perceived ratings-called the superiority gap-is the most critical piece of information because it is thought to determine satisfaction. When expectations are met or exceeded, the gap is positive and the consumer is satisfied. Conversely, if perceived performance falls short of expectations, the gap is negative and the customer is dissatisfied. The second difference score on the LibQual+™ is between the

minimum acceptable level and the perceived level. Termed the "adequacy gap," it indicates how much a service falls above or below the least acceptable level.

Feedback from users of the LibQual+™ is inconsistent about the value of the "gap scores." Hitchingham and Kenney (2002, p. 53) reported "the most intuitively helpful scores one derives from the responses of our users are the scores created by subtracting the scores for the level of service that users view us delivering now (their perceived service scores on questions) from where they would like us to be (their desired scores on questions)." In contrast, Guidry (2002, p. 105) notes "...some respondents stated they could not readily discern the differences among the three service levels, minimum, desired, and perceived, upon which the gap model is based."

4. Criticisms of the gap concept in satisfaction assessment

The "gap" concept also underlies an instrument called the "SERVQUAL," which was created by Parasuraman and his colleagues to be a generic measure of service quality in various sectors of the service economy. According to Parasuraman (2002), "the structure of LibQual+™ mirrors that of the refined version of SERVQUAL." (p. 38). However, unlike LibQual+™, which is still in its developmental stage, SERVQUAL is a well established scale that has been used in numerous and diverse settings. Based on the fairly extensive literature regarding SERVQUAL's psychometric properties (see Asubonteng, McCleary, & Swan, 1996; Carr, 2002; Newman, 2001), the utility of the SERVQUAL gap scores as a measure of satisfaction has been questioned in the literature on both theoretical and empirical grounds (Babakus & Boller, 1992; Babakus & Mangold, 1992; Cronin & Taylor, 1992; Erevelles & Leavitt, 1992; Taylor & Cronin, 1994; Teas, 1993a, 1993b, 1994). Among the more compelling criticisms of the gap or disparity theory of customer satisfaction are the following:

- A logical incongruity can arise when satisfaction is measured as the difference score between an actual (perceived) and a desired (expected) level of service. If after receiving the service a customer experiences a discrepancy between a desired and an actual level of service, future expectations will probably be revised to be closer to the actual (perceived) performance. Because the gap becomes smaller, the next time the customer deals with the same service provider, he or she will theoretically become more satisfied (based on the gap definition) even though the quality of the service has not changed. If improvements in service are made, it is likely that customers will eventually raise their expectations and thus on the next encounter the gap will reemerge even though improvements have occurred (Gurney, 1999). Conversely, by lowering customer expectations, a service provider could in theory improve satisfaction without making any improvements in service (McQuitty, Finn, & Wiley, 2000; Pizam & Milman, 1993; Weber, 1997).
- When expectations are assessed after an experience has occurred, as is the case with the SERVQUAL and the LibQual+™, they are subject to contamination by the experience itself. To avoid the clouding of expectations by the experience, it is necessary to solicit

expectations prior to the experience (Carman, 1990) rather than at the same time that the perceived ratings are collected.

- Rarely do people rate the actual experience as higher than the desired level (Babakus & Boller, 1992; Dorfman, 1979). Thus, it is practically almost impossible to have fully satisfied customers based on the gap criterion. Yet, people frequently report being satisfied despite not having their expectations fully met (Hughes, 1991; Pearce, 1991; Peck et al., 2001; Yuksel & Rimmington, 1998).
- Expectations are based on prior experiences with a particular service. People often have a difficult time formulating their expectations if they are novices to the given experience and may therefore assign an arbitrary or unrealistic rating to an expectation (Westerbrook & Newman, 1978). Sometimes when one has trouble setting expectations, the same desired (expected) level is assigned to all service dimensions. Under this circumstance, in the calculation of the gap, the perceived (actual) rating in essence is being subtracted from a constant, which in effect means that only the perceived rating matters (Crompton & Love, 1995).
- There are statistical concerns with using a gap score because difference scores are notoriously unreliable (Brown, Churchill, & Peter, 1993).

The most telling evidence questioning the definition of satisfaction as the simple difference between a desired (expected) rating of service quality and the perceived (actual) rating can be found in studies that have compared the utility of gap scores and actual (perceived) ratings in their ability to predict an outside criterion, such as repeat purchase intentions, recommendations, or complaints. These studies demonstrate that the actual (perceived) rating alone predicts various aspects of satisfaction as well as or better than the gap score (e.g., Arnould & Price, 1993; Brady, Cronin, & Brand, 2002; Brown et al., 1993; Cronin & Taylor, 1992; Erevelles & Leavitt, 1992; Halstead, 1989; Van Dyke et al., 1999; Yuksel & Rimmington, 1998).

It is reasonable to believe that the concerns that have been raised regarding SERVQUAL are also pertinent to LibQual+™. The primary issue is whether the degree of library users' satisfaction with the library's services should be inferred from the superiority gap or on the perceived performance rating. Given the literature on the Expectancy Confirmation–Disconfirmation theory in general and SERVQUAL in particular, it is hypothesized that on the LibQual+™ the score most closely related to external measures of customer satisfaction will be the perceived rating rather than the gap scores.

5. Procedures

5.1. Participants

In the spring of 2003, approximately 125,000 individuals from 308 colleges and universities participated in the Web-based administration of the LibQual+™ survey. The data for the present study came from the 709 (66.15% female) respondents from an institution

that was one of the participating institutions. Student respondents included 88 freshman, 113 sophomores, 101 juniors, 154 seniors, 76 masters, 23 doctoral, and 8 non-degree. Of the respondents with faculty status, the distribution by rank was as follows: 3 lecturers, 32 assistant professors, 25 associate professors, 17 professors, and 14 adjuncts. The remaining 55 respondents consisted of administrators and staff.

5.2. Instrumentation

The spring 2003 version of LibQual+™ consisted of 25 items that formed the four dimensions identified earlier. Each item is rated on a 9-point scale, with higher values signifying a more favorable impression. Ratings are averaged across the number of items constituting each dimension, so the dimension scores also can range from one to nine.

In addition to the 25 questions that constitute the four LibQual+™ dimensions, the survey contained eight questions that are not in the same format as the core items. Their intended purpose is not stated, but given their location at the end of the survey near the questions dealing with respondent demographics, it is suspected that their purpose is to check the validity of the core section of LibQual+™. These eight questions were used in this study to assess the differential validity of the perceived scores and the superiority gaps in our data. If the superiority gap is the better measure of satisfaction, then it should demonstrate a higher degree of association with these eight questions. Conversely, if the perceived rating has the higher correlation with these questions, then based on the principles of nomological validity, one needs to conclude the perceived score is the preferred measure of satisfaction on the LibQual+™.

6. Results

6.1. Descriptive statistics

Table 1 presents the descriptive statistics on the four scales of the LibQual+™. For each scale, there are five reported values. The first three scores reflecting the respondents' direct ratings of quality are the minimum, desired, and perceived levels of service. The two gap scores are derived from these three ratings: adequacy gap (minimum-perceived) and superiority gap (desired-perceived). On the 9-point scale, the average perceived (actual) ratings ranged between 7.09 (Affect of Service) and 7.54 (Library as Place). On average, the desired (expected) levels were somewhat higher than the perceived ratings, ranging from a low of 7.84 on Library as Place to 8.18 to Personal Control. The minimum acceptable levels were lower than both the perceived and the desired levels; they fell into a narrow range, 6.41–6.70. The superiority gaps were all under 1 point, indicating that the gaps between actual and desired performance were not dramatic.

Table 2 reports similar descriptive statistics on the eight questions that served as the validation criteria. All ratings are on a nine-point scale, with seven of the items having a Likert-type agreement scale. The average ratings on the answers to these questions ranged

Table 1
Mean and standard deviations on the four LibQual+™ dimensions

	n	*M*	*SD*
Affect of service			
Minimum	709	6.41	1.43
Desired	709	7.87	1.03
Perceived	709	7.09	1.27
Adequacy gap	709	0.68	1.48
Superiority gap	709	−0.77	1.27
Library as place			
Minimum	707	6.43	1.58
Desired	707	7.84	1.13
Perceived	707	7.54	1.14
Adequacy gap	707	1.11	1.58
Superiority gap	707	−0.31	1.18
Personal control			
Minimum	709	6.68	1.35
Desired	709	8.18	0.87
Perceived	709	7.35	1.05
Adequacy gap	709	0.67	1.47
Superiority gap	709	−0.83	1.12
Access to information			
Minimum	709	6.70	1.37
Desired	709	8.15	0.90
Perceived	709	7.20	1.16
Adequacy gap	709	0.50	1.54
Superiority gap	709	−0.95	1.25

from 6.11 to 7.41. The parentheses following each question specify the abbreviation for the item that is used in Table 3, which deals with the Pearson correlation coefficients between the LibQual+™ scores and these eight criteria.

6.2. Pearson correlations between LibQual+™ scores and the external criteria

As may be observed in Table 3, on each of the four LibQual+™ dimensions, the score that correlated most highly with each of the eight criteria is the perceived score, which is the customer's rating of the actual level of service being provided. The superiority gap score, which is the measure of satisfaction according to the Expectancy Confirmation–Disconfirmation theory, correlated lower with each of these eight variables (two of which measure satisfaction directly, while the other six are expected to be related to satisfaction on theoretical grounds).

In particular, the reader's attention is directed to the two questions that use the term satisfaction in their phrasing ("In general I am satisfied with the way in which I am treated at the library" and "In general, I am satisfied with library support for learning, research"). On the question dealing with satisfaction with the level of support, the perceived scores correlated as follows with satisfaction: 0.57, 0.44, 0.57, and 0.62. The corresponding correlations between

Table 2
Mean and standard deviations on the supplemental questions

Criterion	n	M	SD
In general I am satisfied with way in which I am treated at library (TREATED)	708	7.41	1.61
In general, I am satisfied with library support for learning, research... (SUPPORT)	709	7.17	1.59
How would you rate overall quality of service provided by library? (OVERALL QUALITY)	709	7.28	1.36
Library helps me stay abreast of developments in my field(s) of interest (STAY ABREAST)	709	6.11	1.74
Library aids my advancement in my academic discipline (ADVANCEMENT)	709	6.69	1.75
Library enables me more efficient in academic pursuits (EFFICIENT)	709	6.92	1.69
Library helps me distinguish trustworthy and untrustworthy information (DISTINGUISH)	709	6.19	1.86
Library provides me with information and skills I need in work or study (INFO and SKILLS)	709	6.59	1.72

Note. With the exception of OVERALL QUALITY, all responses are on a scale of 1 = *strongly disagree* to 10 = *strongly agree*. Ratings of OVERALL QUALITY are from 1 = *extremely poor* to 9 = *extremely good*.

this external question and the four LibQual+™ superiority gap scores are relatively lower, namely, 0.44, 0.30, 0.45, and 0.50. Averaging across the four dimensions, one finds that the mean correlation between satisfaction and the LibQual+™ perceived level of service is 0.55, whereas the average correlation between satisfaction and LibQual+™'s superiority gap is 0.42. The same pattern can be observed on the question dealing with library treatment satisfaction. That is, on average, answers to the external question of satisfaction with library treatment correlate 0.50 with the perceived rating and only 0.38 with the superiority gap (see Corey, Dunlap, & Burke, 1998, for a discussion of issues in averaging correlation coefficients).

6.3. Multiple regression with perceived and gap scores as predictors

Next, the authors sought to determine if the superiority gap score contributed to the predictability of level of satisfaction (as reported in the answers to the two satisfaction questions) beyond what is possible with just the perceived rating alone. A separate regression was run on each of the four LibQual+™ dimensions under the two criteria. In other words, eight stepwise multiple regressions were conducted. In the first four, the criterion was the question dealing with the respondents' satisfaction with how they were treated at the library. The remaining four multiple regressions used satisfaction with the library's support of learning and research as the dependent variable. The two predictors (independent variables) in each of these multiple regressions were the perceived rating (entered in step1) and the superiority gap (entered in step 2). The results, presented in Table 4, indicate only a minimal

Table 3
Pearson correlations between the five scores on the four domains and the external criteria

	Stay abreast	Advancement	Efficient	Distinguish	Info and skills	Treated	Support	Overall quality
Affect of service								
Minimum	0.16	0.16	0.13	0.15	0.10	0.13	0.15	0.15
Desired	0.10	0.16	0.16	0.13	0.10	0.13	0.16	0.15
Perceived	0.36	0.36	0.37	0.28	0.36	0.70	0.57	0.68
Adequacy gap	0.16	0.15	0.19	0.10	0.22	0.47	0.34	0.43
Superiority gap	0.28	0.23	0.25	0.18	0.28	0.60	0.44	0.56
Library as place								
Minimum	0.18	0.22	0.18	0.19	0.14	0.10	0.14	0.11
Desired	0.10	0.19	0.20	0.17	0.12	0.12	0.13	0.14
Perceived	0.32	0.38	0.41	0.32	0.36	0.36	0.44	0.46
Adequacy gap	0.05	0.06	0.12	0.04	0.12	0.17	0.18	0.23
Superiority gap	0.22	0.19	0.21	0.15	0.22	0.23	0.30	0.31
Personal control								
Minimum	0.15	0.17	0.16	0.14	0.11	0.10	0.14	0.10
Desired	0.07	0.14	0.16	0.12	0.09	0.12	0.12	0.11
Perceived	0.44	0.46	0.49	0.39	0.47	0.46	0.57	0.59
Adequacy gap	0.18	0.17	0.21	0.15	0.24	0.23	0.28	0.33
Superiority gap	0.36	0.32	0.34	0.27	0.37	0.33	0.45	0.47
Access to information								
Minimum	0.16	0.18	0.16	0.13	0.10	0.09	0.13	0.09
Desired	0.10	0.19	0.20	0.10	0.11	0.11	0.10	0.11
Perceived	0.49	0.51	0.53	0.41	0.53	0.46	0.62	0.62
Adequacy gap	0.22	0.23	0.26	0.20	0.31	0.27	0.35	0.38
Superiority gap	0.38	0.34	0.36	0.31	0.41	0.35	0.50	0.49

Note. Correlations of 0.09 and above are statistically significant.

Table 4
Multiple correlation following stepwise regression using the perceived and superiority gap score in each dimension to predict satisfaction

	Step	Criterion: satisfaction with way treated at library	Criterion: satisfaction with library support for learning and research
Affect of service	1: Perceived	0.699	0.568
	2: Superiority gap	0.719	0.574
Library as place	1: Perceived	0.362	0.444
	2: Superiority gap	0.365	0.451
Personal control	1: Perceived	0.458	0.573
	2: Superiority gap	0.459	0.578
Access to information	1: Perceived	0.463	0.615
	2: Superiority gap	0.463	0.621

Table 5
Change statistics for the entry of superiority gap scores into a stepwise multiple regression for predicting satisfaction with treatment at the library

Dimension	Beta	t	P	Partial correlation	Collinearity statistics (tolerance)
Affect of service	0.232	6.59	0.000	0.241	0.551
Library as place	0.056	1.35	0.179	0.051	0.721
Personal control	0.039	0.85	0.398	0.032	0.537
Access to information	0.033	0.69	0.491	0.026	0.480

contribution of the superiority gap score once its shared variance with the perceived rating is removed.

With satisfaction with one's treatment at the library as the criterion, the only dimension where the superiority gap score contributed any unique variance to the prediction of satisfaction occurred on the Affect of Service dimension (see Table 5). The correlation between Affect of Service and satisfaction with treatment by the library increased from 0.699 to 0.719 after the gap score entered into the equation. For the remaining three dimensions (Library as Place, Personal Control, and Access to Information), the contribution of the superiority gap score was so minor that it failed to reach statistical significance.

When the criterion was satisfaction with the library as a learning and research resource, the entry of the superiority gap score as the second step was statistically significant for all four dimensions (as shown in Table 6), but the magnitude of the increase in the size of the correlation was very small. For Affect of Service and Access to Information, the increase becomes invisible once the correlation coefficient is rounded from 3 significant figures to 2 significant figures (as is customary in reporting correlation coefficients).

7. Discussion

Although LibQual+™ is described as a measure of service quality rather than satisfaction, users of the questionnaire frequently consider it to be a measure of the latter. For example, on the Web page describing Ursuline College's results, it is stated that "LibQual+™ is designed

Table 6
Change statistics for the entry of superiority gap scores into a stepwise multiple regression for predicting satisfaction with library support for learning and research

Dimension	Beta In	t	P	Partial correlation	Collinearity statistics (tolerance)
Affect of service	0.111	2.66	0.008	0.100	0.550
Library as place	0.094	2.36	0.019	0.089	0.720
Personal control	0.104	2.48	0.013	0.093	0.536
Access to information	0.115	2.71	0.007	0.101	0.481

to assess outcomes, namely the levels of satisfaction perceived by a library's user groups" (Murphy, 2004, p. 1, para. 1). Similarly, the Medical Sciences Library (MSL) of New York Medical College (NYMC) announces that the school "…participated for the second consecutive year in the Association of Research Libraries' LibQual+ Web-based user satisfaction survey." These descriptions should not be surprising, given that even the latest LibQual+™ procedures manual also describes the instrument as a "customer satisfaction survey" when presenting a sample IRB proposal.

The distinction between service quality and satisfaction is not entirely clear on the LibQual+™ Web page dealing with frequently asked questions about the project (http://www.libqual.org/About/FAQ/index.cfm#FAQ25). In reply to the question "What is the difference between the LibQual+™ survey and a customer satisfaction survey?" the following rather murky answer is provided. Note that no reference to satisfaction is made so that it can not be contrasted to service quality.

> Customer service can be defined as comprising all programs, activities, facilities, etc. of an organization, which have a bearing on customers' experiences during and as a result of their interactions with the organization. Customer service focuses on the customers' personal and emotional reaction to service. Service quality is the customers' assessment of how good/bad, or pleasant/unpleasant their experiences are. 'Service quality' is the customers' subjective evaluation of 'customer service.' The LibQual+(TM) instrument Service quality 'measurements' are snapshot or discrete summaries of customers' evaluation of their experiences.

While service quality may theoretically be different from satisfaction, and understanding one's quality of service can be valuable in its own right (Hernon & Nitecki, 2001; Hernon et al., 1999; Nitecki & Hernon, 2000), it is nonetheless also clear that the distinction is frequently either not understood or ignored by users (probably the former). [Some users of the SERVQUAL also seem to consider it a measure of satisfaction (see Mishra, Singh, & Wood, 1991; Scardina, 1994; Wisniewski, 2001).] Moreover, a primary aim of administering the LibQual+™ appears to be one of gauging the customer's level of satisfaction with an academic library's services.

The LibQual+™ provides 20 scores, but none of them contains the word "satisfaction" in its titles (other than the supplementary questions, which are not considered "core" questions). If the administrators at the library want to know the library users' level of satisfaction with various aspects, on which scores should they rely primarily? Based on the Expectancy Confirmation–Disconfirmation theory that is the theoretical underpinning of LibQual+™, one should consider the superiority gap as most predictive of satisfaction. Yet the conceptualization of satisfaction as the difference score between the desired level of service and a perceived level of service is not supported by the results. On all four dimensions tapped by the LibQual+™, the perceived (direct) ratings correlated more highly with the global measures of library performance than did the superiority gap scores. Even more disturbing is the finding that the primary reason the superiority gap scores correlated with the criteria for validation in the first place is that the perceived score is part of the superiority gap score. Once that intercorrelation is removed, the relationship of the gap score to the validation measures drops dramatically. If one wishes to ascertain how satisfied users are with the services provided by the library, then, given the evidence presented here, it may be best to consider the perceived ratings rather than the superiority gap scores as the basis for this decision. The current results

on the LibQual+™ concur with the findings of a number of researchers working with the SERVQUAL and its other adaptations, who have similarly concluded that performance-only assessment is the most valid framework for gauging customer satisfaction (e.g., Brady et al., 2002; Cronin & Taylor, 1992, 1994; Hudson, Hudson, & Miller, 2004; Lee, Lee, & Yoo, 2000; Taylor & Cronin, 1994; Yuksel & Rimmington, 1998). Clearly, one can be satisfied despite not having one's expectations fully met (Hughes, 1991; Pearce, 1991; Peck et al., 2001; Yuksel & Rimmington, 1998).

This, of course, is not to say that the notion that expectations play a role in forming one's satisfaction should be dismissed entirely. There is some evidence that people do incorporate an expectation even when rendering a direct satisfaction or performance rating (Roszkowski, 2003; Roszkowski & Ricci, 2005). But there are psychometric issues that come into play when one tries to capture the expectations in terms of "desired" and "minimum" scores. The main problem is that people probably have a difficult time defining their expectations (see Crompton & Love, 1995; Guidry, 2002; Westerbrook & Newman, 1978). Why should one not want to receive the best possible in all services from the library? The second problem may be that the superiority gap score by its very nature is unreliable (see Brown et al., 1993). Data assessing the reliability of the LibQual+™ gap scores is sorely needed. Perhaps one way to avoid the low reliability of difference scores is to ask directly about how much the service met one's expectations (e.g., much less than expected, somewhat less than expected, about what was expected, somewhat more than expected, much more than expected) instead of computing differences among ratings. If it is necessary to consider expectations, then some alternative scheme needs to be developed to capture the expectations. The current difference scores do not seem to do the job as intended.

8. Conclusions

Perhaps the most useful role that the LibQual+™'s desired and minimum scores can play is diagnostic (see Parasuraman et al., 1994), helping to put the perceived rating into a context and thereby helping the manager to prioritize interventions. However, in order to prioritize, it may be more useful if the rating scale were not in terms of "desire" but in terms of "importance" (see Crompton & Love, 1995; Rao & Kelkar, 1997; Yuksel & Rimmington, 1998), as was the case in the instrument developed by Hernon and Calvert (1996). Also, perhaps a shorter version of the LibQual+™ with just performance-only ratings should be developed, as in the case of the SERVPERF, the performance-only variant of SERVQUAL (Cronin & Taylor, 1994; Taylor & Cronin, 1994). Response rates decrease with questionnaire length, particularly when the salience of the issues is low (Bean & Roszkowski, 1995; Roszkowski & Bean, 1990), and one would suspect that for most people completing the LibQual+™ salience of the issues addressed by it is not very high. A shorter, performance-only adaptation of this instrument would be very useful on those occasions when customer satisfaction is the primary goal of the assessment and time is of the essence. Finally, the purpose of the supplemental satisfaction questions at the end of the LibQual+™ is unclear, but it would appear that the value of the instrument can be

enhanced by their retention. Hopefully, they will be included in the final edition of the LibQual+™.

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