

Factor Analysis of Service Quality in University Libraries in Sri Lanka – An Application of Servqual Model

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Abstract

This research paper seeks to advance the application of SERVQUAL tool developed by Parasuraman et.al (1985) for measuring services quality. In Sri Lanka, realizing the necessity of complying with customer perception of high quality service, have begun to search for alternative ways to satisfy their customer on the basis of service quality. This study, therefore, examines the factors determining the service quality of university libraries. Primary and secondary data were used to conduct the study. Sophisticated statistical model as “Exploratory Factor Analysis” (EFA) has been used. The study reveals that four factors extract from the analysis that together accounted 50.317% of the total variance. These factors were categorized as convenient opening hours, current information, collection comprehensiveness and convenient access to collection.

Keywords: Service quality, SERVQUAL model, convenient, current information, comprehensiveness, and convenient access

1.0 Background of Study

The turn of the century has been propounded changes in the global economy. Services have played a crucial part in these changes, because services are becoming the way organizations meet with their markets (Irons, 1997). Organizations have discovered that their survival no longer exclusively depends on the products they offer, but also on the additional offerings they make to their customers that differentiate them from their competitors. Innovative organizations, offering new services as well as unique customer services, are now succeeding in markets where established organizations have failed (Lovelock and Patterson, 1998). Service quality is a relativistic and cognitive discrepancy between experience-based norms and performances concerning service benefits (Roest and Pieters, 1997). In modern business world, service quality has become one of the most popular marketing issues. It is an approach that infiltrates many academic disciplines, such as psychology, business and library science. As a result, many commercial service quality studies have been commissioned by numerous service providers (Azar 2007; Badri, Abdulla & Al-Madani 2005; Mazzeo 2004; Sivadas & Prewitt-Baker 2000), as it is critical for such service providers to prove their strength in business performance in a competitive business environment (Chowdhary & Prakash 2007; Mehta, Lalwani & Soon 2000; Park 2007; Shemwell, Yavas & Bilgin 1998). Universities in Sri Lanka are government-owned institution. University libraries in Sri Lanka are managed within the framework of the Universities Act No. 16 of 1978. Each national University has a library, which is considered as one of the main departments in that university. It is administered by a librarian, who is one of the principal officers of the University, and supported by professionals and supporting staff. The mission of the university libraries is to provide the required support for teaching, learning and research by performing a variety of functions, such as the provision of textbooks, supplementary reading and reference materials, periodicals, and recreational resources. Objective of the study is to identify the factors which determine the service quality of the library services. In other words, the purpose is to find out the dimensionality of the library service being provided by the university libraries so that the service quality model for the university libraries can be empirically worked out.

2.0 Literature Reviews

In the past three decades, although more and more research findings have appeared concerning quality, it is still worth noting here that are several distinct conceptualizations of quality (Holbrook, 1994). In the present world, traditional service providing model and role of university libraries among the user or customer are changed to technological development. Silva (1995) stated that Sri Lankan University libraries fail to meet the customer expectation and also he articulates that lack or inadequate fund provided by government. However, Nanayakkara (2008) expressed that the tangible and

intangible services available at University libraries in Sri Lanka are of a high standard compared to other libraries on the Indian subcontinent. One of the main research instruments for measuring quality in service industries is the servqual model, developed by Parasuraman Berry and Zeithaml and Parasuraman, Zeithaml, and Berry (1985; 1988).

Library quality has been assessed in terms of library collections–size, diversity and comprehensiveness of subject coverage (Dugan & Hernon 2002; Nitecki 1996). Hernon and Altman (1998) and Shi and Levy (2005) emphasized that most traditional statistics regarding libraries lack relevance and do not measure the library's performance in terms of characteristics important to customers. These statistics have particularly failed to describe the performance of the library or to indicate whether or not the quality of the library is good, indifferent or bad. Dugan and Hernon (2002) perceive quality as a multi-faceted concept that focuses on collections, services and the place of the library in the learning process, within a given context. The level of service quality is represented by the gap between perceived and expected service. The servqual model is based on five service quality dimensions, namely tangibles (physical facilities, equipment and personnel appearance), reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customers and provide prompt service), assurance (knowledge and courtesy of employees and their ability to gain trust and confidence) and empathy (providing individualized attention to the customers).

Service quality has three components viz. interaction quality (attitude, behavior, and expertise), physical environment quality (atmosphere, design, social factors) and outcome quality (waiting time, tangibles, and valence) (Brody and Cronin 2001). Sreetharan and Velnampy(2012) indicated that Patients' perceptions about health care systems seem to have been largely ignored by health care managers in developing countries. Patients' voice must begin to play a greater role in the design of health care service delivery processes in the developing countries. It should go without saying that customers are the lifeblood of all organizations, yet few companies seem to be fully capable of matching their performances to the needs of their customers, either in quality, efficiency or personal service. Zeithaml and Bittner (1996) expressed that customers have two types of expectation such as desired and adequate expectations.

3.0 Research Design

3.1 Data sources

Given the nature of the present study, it was required to collect data from the primary and secondary sources. Primary data were collected through the questionnaire. Secondary data were collected from research studies, books, journals, newspapers and ongoing academic working papers. The collected data should be processed and analyzed in order to make the study useful to the practitioners, researchers, planners, policy makers and academicians.

3.2 Measures

The questionnaire was administrated to users (students, academic staff, and non- academic staffs) of the university library. Questionnaire is prepared with seven point Likert- scaling system. In a way, qualitative data converted into quantitative and then details analysis was made with appropriate statistical tools in order to prove the objective and to test the hypotheses. Questionnaire is designed to gather the data. Questionnaire consists of twenty three (23) statements to measure the service quality which can be measured through staff approachability, complaint responsiveness, courtesy of the staff, personal attention, supportive atmosphere, staff knowledge ability, promptness of the staff, reflective and creative place, convenient access to collection, collection comprehensiveness, current information, good ventilation, good functional furniture, good lighting facility, access computer, e- journal access, customer educational programme, convenient opening hours, error free record in the system, helpful directional signs, need oriented resources and air condition.

Sampling

Nowadays, thirty one libraries attached to the national universities, seven postgraduate institutions and nine other higher education institutes (University Grants Commission of Sri Lanka Statistics 2007), but we have selected three universities library users (University of Jaffna, University of Kalaniya and Vavuniya Campus) for this study. Following table shows the sampling.

Table No-01 Details of sample

Ser.No	Name of University	No of Participants	Number of respondents	Percentage
01	University of Jaffna	100	87	87%
02	University of Kalaniya	100	71	71%
03	Vavuniya Campus	100	74	74%
	Total	300	232	

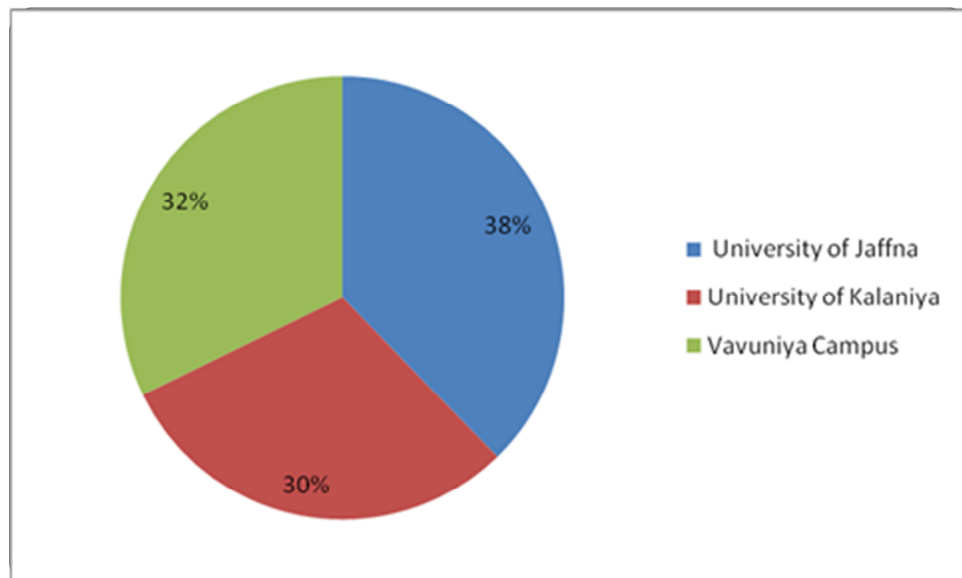


Figure 01: Details of sample

Using the random sampling technique, a total of three hundred library users (300) were selected as a sample of the study from three universities in Sri Lanka. Two hundred and thirty two (232) respondents completed the questionnaire and the rest did not return.

4.0 Results and Discussion

4.1 Reliability

It is important to test the reliability and validity of the instrument. The internal reliability of the items was verified by computing the Cronbach's alpha. Nunnally (1978) suggested that a minimum alpha of 0.7 sufficed for early stage of research. The Cronbach alpha estimated for each dimension of service quality in Sri Lankan universities are given by Table 02.

Table No-02 Reliability Statistic – Measure of Service Quality

S.No	Dimensions of Service Quality	Cronbach's Alpha if item Deleted
01	Staff approachability	.929
02	Complaint responsiveness	.911
03	Courtesy of the staff	.909
04	Personal attention	.911
05	Supportive atmosphere	.905
06	Staff knowledge ability	.938
07	Promptness of the staff	.923
08	Reflective and creative place,	.925
09	Convenient access to collection	.931
10	Collection comprehensiveness,	.947
11	Current information	.966
12	Good ventilation,	.897
13	Good functional furniture,	.967
14	Good lighting facility	.978
15	Access computer	.934
16	e- journal access	.899
17	Customer educational programme	.925
18	Convenient opening hours	.976
19	Error free record in the system	.891
20	Helpful directional signs	.879
21	Need oriented resources	.929
22	Air condition	.987
23	Audio visual equipment	.978

Alpha value greater than 0.7 are acceptable evidences of dimension reliability (Nunnally, 1978, George and Mallery, 1995). In this case, Alpha values for the overall scale is high, as reliability coefficients for dimension of service quality exceed the 0.7 cut off recommended by Nunnally, 1978 and Hair et al., 1988.

4.2 Validity

An important aspect of increased rigor in conducting scientific research in the modern positivist paradigm is the testing for content and convergent validity. The Content validity ensures that the measure includes an adequate and representative set of items that tap the domain of the concept (Malhotra 2005,&2004, Warnakulasuriya, 2009). An exact literature review was carried out to ensure the content validity of the both construct.

4.3 Factor Analysis

An Exploratory Factor Analysis (EFA) of the factor structure of the SERVQUAL scale used was undertaken with SPSS to examine the factor structure of variable. The EFA procedure employed is “Principle components method” for extraction with “Varimax rotation” and factors with eigen values greater than one were alone retained (Hair, Anderson, Tatham, and Back, 1998).

KMO and Bartlett’s test

Kaiser – Meyer – Olkin (KMO) test assist to measure sample adequacy. Kaiser (1974) recommends accepting values of greater than 0.5. As per KMO measure, a measure of > 0.9 is marvelous, >0.8 is Meritorious, >0.7 is middling, > 0.6 is mediocre, > 0.5 is miserable and < 0.5 is unacceptable.

Table No -03; KMO and Bartlett’s test

Kaiser –Meyer – Olkin Measure of sampling adequacy		.930
Bartlett’s test of Sphericity	Approx Chi Square	19334.492
	df	253
	Sig	.000

In the present study, value of sampling adequacy is 0.930, which falls into the range of being superb. So, we should be confident that factor analysis is appropriate for these data. In this study, the data within this study returned a significance value of 0.00, indicating that the data was acceptable for factor analysis.

After examining the reliability, validity of the scale and testing appropriateness of data as above, we carried our factor analysis to measure the service quality. For this, we employed Principal Component Analysis (PCA) followed by the varimax rotation, (Generally, researchers’ recommend as varimax). On conducting EFA by way of principal component analysis method (PCA), four eigen value are extracted sums of squared loadings total, exceeded one with percentage cumulative variance explained 50.317 in case of measure of service quality.

Table No -04; Total Variance Explained

Component	Initial Eigen Values			Extraction Sums of Squared loading			Rotation Sums of Squared loading		
	Total	% of variance	cumulative	Total	% of variance	cumulative	Total	% of variance	Cumulative
1	7.290	31.696	31.696	7.290	31.696	31.696	3.730	16.219	16.219
2	1.739	7.560	39.256	1.739	7.560	39.256	3.340	14.523	30.742
3	1.317	5.725	44.981	1.317	5.725	44.981	2.553	11.099	41.842
4	1.227	5.336	50.317	1.227	5.336	50.317	1.949	8.475	50.317

On conducting EFA by way of Principal Component Analysis method, four Eigen values are extracted whose extraction sums of squared loadings total, exceeded one with percentage cumulative variance explained was 50.317 in case of service quality. Factor one explains 31.696% of total variance. It should be clear that the first few factors explain relatively large amount of variance whereas subsequent factors explain only small amount of variance. Eigen value for factors is higher than one. eigen values associated with these factors are displayed in the columns labeled Extraction Sums of Squared Loadings.

Table No -05: Total Variance Explained

Se.No	Initial	Extraction
Q1	1.000	.435
Q2	1.000	.414
Q3	1.000	.530
Q4	1.000	.469
Q5	1.000	.343
Q6	1.000	.654
Q7	1.000	.545
Q8	1.000	.739
Q9	1.000	.484
Q10	1.000	.335
Q11	1.000	.690
Q12	1.000	.513
Q13	1.000	.536
Q14	1.000	.488
Q15	1.000	.378
Q16	1.000	.487
Q17	1.000	.683
Q18	1.000	.597
Q19	1.000	.343
Q20	1.000	.484
Q21	1.000	.550
Q22	1.000	.464
Q23	1.000	.412

Above Table clearly shows communalities before and after extraction. Principal component analysis works on the initial assumption that all variance is common; therefore, before extraction the communalities are all 1. The communalities in the column labeled Extraction reflect the common variance in the data structure.

Table No -06: Total Variance Explained

	Component			
	1	2	3	4
Q18	.800			
Q7	.684			
Q16	.647			
Q13	.638			
Q12	.579			
Q21	.550			
Q14	.459			
Q11		.677		
Q17		.661		
Q4		.567		
Q3		.523		
Q15		.516		
Q1		.514		
Q5		.496		
Q8		.429		
Q10			.833	
Q20			.647	
Q19			.747	
Q9				.648
Q2				.645
Q22				.586
Q6				.543
Q23				.427

Table 06 shows that factors were divided into the four groups. Each of four service quality factors listed in table No -06 is labeled according to the name of the value that loaded most highly for those service quality. It is worth declaring out here that factor loading greater than 0.30 are considered significant. 0.40 are considered more important and 0.50 or greater are considered very significant. The rotated (Varimax) component loadings for three components (factors) are presented in Table No- 05. For parsimony, only those factors with loadings above 0.50 were considered significant (Pal, 1986; Pal and Bagi, 1987; Hari,

Anderson, Tatham, and Black, 2003). The higher a factor loading, the more would its test reflect or measure as service quality (Pallant, 2005). Actually in this study, minimum factor component loadings of 0.421 or higher are considered significant for EFA purposes.

The services quality variable getting highest loading becomes the title of each factor of services quality. e.g. 'Convenient opening hours'- title of service quality factor-I and the like.

Group –I **Convenient opening hours** include the seven factors such as convenient opening hours, promptness of the staff, e-Journal access, good functional furniture, good ventilation, need oriented resources and good lighting facility with loading ranging from 0.8 to 0.459.

Group- II **current information consists** of eight factors such as current information, customer educational programme, personal attention, courtesy of the staff, access computer, staff approachability, supportive atmosphere, and reflective and creative with loadings ranging from 0.677 to 0.429.

Group- III **collection comprehensiveness** includes three factors such as collection comprehensiveness, helpful directional signs and error free record in the system with loading ranging from 0.833 to 0.647.

Group - IV **convenient access to collection** includes five factors such as convenient access to collection, complaint responsiveness, air condition, staff knowledge ability and audio visual equipment with loading ranging from 0.648 to 0.427.

4.3 Conclusion

Today library introduces many new services either converting existing services into e- services or by developing and implementing entirely new services for searching, delivery and use of information. Such new or converted services include e.g. online service, portals, digitized collection, etc to enhance the quality of library services. Quality will be mainly defined by the speed and accuracy of reference and information delivery services, open access to both physical collection and online retrieval systems. The comprehensiveness and good support from library staff is most important needs in a library. The efficiency of background processes, convention of workshop, seminar, in service training of new technology introduced, refreshment course organized by library professional community are most essential for library to cope with globalization. Performance measurement and user survey can show whether a library is efficient and effective in delivering services.

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