

## Perceived Service Quality and User Satisfaction in Library Environment

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**Abstract:** This research is aimed at assessing the effect of library service quality on library usage and user satisfaction. This study focuses on assessing the effect of three dimensions of LibQual<sup>+</sup>™ instrument (affect of service, information control, library as place) on library usage and user satisfaction. The data for this study was collected through self-administered questionnaire to undergraduate students of a private university. The data collected was tested for convergent/discriminant validity, reliability and the dimensions of the research construct were identified through a multi-step scale of exploratory and confirmatory factor analysis. Multiple regression was conducted to test the hypotheses raised in the study through the use of structural equation model and also to validate the research model. The findings indicate that library service quality has a significant positive effect on library usage and a direct significant effect on user satisfaction while a non-significant effect of library service quality was identified when the total effect was carried out on user satisfaction. This study also found that library usage have a direct significant effect on user satisfaction and library service quality has significant positive effect on user satisfaction through library usage.

**Key words:** Library service experience, library service quality, affect of service, information control, library as place, library usage, user's, satisfaction

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### INTRODUCTION

Information has been identified as a vital key to the overall development of man (Terhile and Anthanusis, 2013). Library services and materials serve as support and contribute to the learning, academic research and teaching needs of the academic environment. The library clientele expects that library information materials are organized for easy accessibility (Terhile and Anthanusis, 2013). Rapid technological advancement in information technologies has generated changes in library service delivery process, redefined information collection, placed a demand on library staff skills, library facilities and infrastructure. This has placed a demand on decision makers in library environment on how to meet and exceed users service expectation and experience for library information and service delivery. This result to a post-consumption evaluation by users, in determining the satisfaction level and perceived quality derived from library services. Consumers of library services expect that academic libraries should adopt changes in library services due to the changing needs of its technologically inclined users. According to Fegan (2014), service quality is the

experience assessment carried out by the users, on how good/bad or pleasant/unpleasant the product or service is. Hence, this study seeks to assess how library service quality influences actual experience of the library users and their level of satisfaction.

In conducting service quality assessment, various scholars proposed different model such as WebQUAL, SiteQual, E-S-Qual, DigiQUAL, LibQual, ServQual, etc. which has been used in measuring service quality in different areas. In this study, LibQual<sup>+</sup>™ was adopted because the instrument has been validated as the basic measuring tool that foster the culture of easy information assessment and improvement in the library environment. LibQual, collect feedbacks from both E-library and physical users on its service delivery process, functionalities and contents, in order to create an improvement in the delivery of quality information (Kyriallidou and Cook, 2008). The major gap found as barrier to users' satisfaction in library service quality has been identified to be information accessibility, lack of trained personnel, poor library service relationship and lack of library space which constitute the major assessment parameters of libQual service quality instrument.

Therefore, this study focuses on the empirical evidences of the effect of library service quality on service experience and user satisfaction in library environment. This study aim at increasing the level of user's library usage, satisfaction and perceived library service quality. Hence, through the use of the research instrument called LibQual<sup>+</sup>™ this study investigates library service quality on three dimensions namely: affect of service, information access and the library as place.

### **Literature review**

**Library environment:** Library services are social services that motivate the reading habit of the society including people in the academic environment (Terhile and Anthanusus, 2013). According to Saunders (2008), there is 0a basic need of information resources for faculty, staff and student of higher education, hence the library is set out to provide articles and books containing information needed by the user. Withers emphasized that with the presence of the library in a community, individuals will be provided with information material under appropriate equitable policies. It provides index and abstract services covering the professional periodicals received in the library, provision of computer services and convenient hours of services, displaying of newly received books in an appropriate place and arranging for book exhibitions. The library environment provides information and resources for learning and research in the academic environment.

**Concept of LibQual<sup>+</sup>™:** LibQual<sup>+</sup>™ is a survey instrument used in estimating the contribution and satisfaction level of the library users to academic library services (Roszkowski *et al.*, 2005). This instrument was first introduced by the Association of Research Libraries (ARL) in conjunction with faculty members at Texas A&M University aim at increasing the overall user's satisfaction with the library. ServQual is a model used in determining the quality of services in retail business while LibQual<sup>+</sup>™ was drawn out of it, for the development and measurement of service quality in the library setting (Saunders, 2008; Zain and Othman, 2002).

Rust and Oliver (1994) gave the three component Model of service quality which emphasized that for a firm to produce quality service, it must have a good service product, an efficient delivery and conducive environment for both the employees and customers. In condemning this model, Zain and Othaman (2002), stated that this model has not been thoroughly tested and the component are not entirely clear for use because it is general in nature. This model might not be advisable conducting the measurement of the user's satisfaction in the library

service environment, since services are of various types. Hence, this study adopts the LibQual<sup>+</sup>™ survey instrument in measuring the library user's perception level and satisfaction level. Association of Research Libraries, defined LibQual<sup>+</sup>™ to be a survey instrument used in soliciting, tracking, understanding and means of acting on users' opinions on the library service quality rendered. The three dimensions of service quality measured by LibQual<sup>+</sup>™ are: affect of service, information control and library as place.

**Affect of service:** This refers to the human contribution to its service quality (Fegan, 2014). He further gave some qualities that should be found in the service rendered by the library staff: ability to give the users an undivided attention individually and with care, willingness to respond to user's question in order to aid library usage, efficient knowledge to answer questions and direction, dependability in handling user's service challenges in order to instill confidence in them, etc. Hence, affect of service is the relationship between the qualities of service provided by the library staff and its user's experience. Studies have shown that the number and attitude of the library staff do not have much effect on the users overall experience and satisfaction from the library.

**Information control:** This measures the strength and ease of access to information and collection of information resources made available in the library. Information control includes service qualities that can increase user's information access to: printed library materials, electronic information source, modern equipment that allow easy transmission of information, easy access to website tools which help individual to locate information.

**Library as place:** This refers to the library building, tools and its environment for individual and group study. The library space should inspire easy assimilation, ensure quiet space for individual activities and community space for group study. In the research carried out by Shill and Tonner only certain improvements were associated with usage gains, suggesting that not all improvements to library space are necessary but vital ones which contribute to the improvement of service quality and users satisfaction.

### **Conceptual framework and hypothesis development**

**Perceived library service quality:** Service quality helps different organization service delivery process from that of their competitors (Ogunnaike *et al.*, 2011). Rehman and Sabir (2012) defined perceived library service quality as the difference between user's expectations about the

service and the perceptions of actual service received. According to Nejati and Nejati (2008) the dominance of service quality in business and marketing strategy has indeed facilitated the success of competition globally. Hence, for provision of quality library service by the universities, the individual users' expectation is used as a means of competition in the market place because service quality has gone beyond the walls of theoretical expressions (Ogunnaike *et al.*, 2011; Joseph and Joseph, 1997). In the research carried out by different scholars, traditionally library services have been measured via information collection, number of visitors, issuance and returning statistics, budget and employee size but user's of library resources have different expectations of library services which will result to difference in opinion about their perceived library services (Weiner, 2005; Rehman and Sabir, 2012).

**Concept of user's satisfaction:** In the research carried out by Rehman and Sabir (2012), the core users of the academic library are grouped into faculty, undergraduate students and graduate students. There is a widely accepted notion that service quality is an antecedent of satisfaction (Roszkowski *et al.*, 2005; Shi *et al.*, 2004). However, some researchers argued that while service quality is the cumulative evaluation of transactions over time, satisfaction is transaction specific. Hence, customer satisfaction is defined as a post-consumption evaluation or experience of a product or service (Zhou, 2004). According to Terhile and Anthanusus (2013) academic library satisfaction is the provision of actual information or services that will meet the needs of an information seeker or user. This makes it mandatory to perform some assessment on the library service quality and delivery in order to ensure ultimate satisfaction. Saunders (2008) argued against knowledgeable staff contributing to information satisfactory level of the users. It appears that users are prone to self-sufficiency in finding the information they need due to the easy availability of the internet and its search engines (Bawden and Vilar, 2006).

Terhile and Anthanusus (2013) stated that if a library is managed by well qualified, experienced and cultured staff, users will always be encouraged to make use of the library. Contrary to this, research done by some scholars made it known that efficient access to information is a good predictor to adequate information source while staff attitude has no base in predicting the information quality to the users (Saunders, 2008). A proposition of the conceptual framework is summarized in Fig. 1. The following hypothesis is derived from the relationship in conceptual framework.

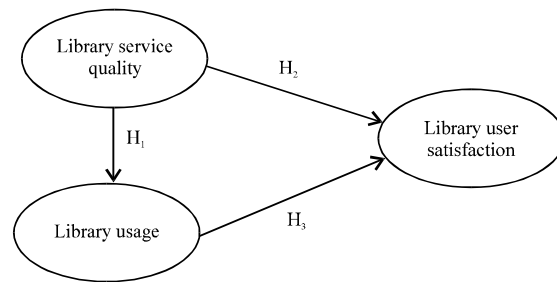


Fig. 1: Conceptual framework of research hypothesis

- H<sub>1</sub>: Library service quality has significant positive effect on Library usage
- H<sub>2</sub>: Library service quality has significant positive effect on Library user satisfaction
- H<sub>3</sub>: Library usage has significant positive effect on Library user satisfaction
- H<sub>4</sub>: Library service quality has significant positive effect on Library user satisfaction through library usage

## MATERIALS AND METHODS

To test the framework presented in Fig. 1, this study employed quantitative approach to data collection. The data for this study was collected using a structured questionnaire administered to undergraduate students of Covenant University which is a private tertiary institution. A total of 300 questionnaires were administered randomly to the student across the three colleges namely College of Business and Social sciences, College of Engineering and College of Science and Technology. This was done in order to have a proper representation of the target respondent brands were analyzed. A total of 250 questionnaires were completed. Invalid and incomplete questionnaires were rejected, resulting in 229 valid questionnaires.

The items used in this research were adapted from relevant literature. Hunter and Perret (2011) version of LibQual<sup>TM</sup> consisted of 22 items that formed the three dimensions of LibQual (affect of service, information control and library as place) was adopted for this study. Each item is rated on a 9-point scale with higher values signifying a more favorable impression. To validate the dimension of the study construct, ensure the reliability and validity of the measures, multi-item scales were employed using exploratory and confirmatory techniques (Edwards and Bagozzi, 2000). To assess the initial reliability of the measures, Cronbach's alpha test was employed, Exploratory Factor Analysis (EFA) with varimax rotation on each scale was evaluated in order to

validate the dimensions of the study construct. Confirmatory factor analysis was carried out in order to assess the validity of the research construct. Convergent and discriminant validity was carried out. To establish convergent and discriminant validity, Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV) and Average Shared Squared Variance (ASV) (Hair *et al.*, 2010). In other, to test the hypothesis raised in this study and validate the proposed research model, multiple regression using structural equation model AMOS 18 was carried out on the data gathered for this study.

**RESULTS AND DISCUSSION**

The frequency distribution of the respondents reflects the female respondents as the highest number with 55.0% (n = 119) while the male respondent has the second with the value 48.0% (n = 110) (Table 1). The respondent's profession distribution shows that they are all student from Covenant University. Majority of the respondent shows that they are in 200-300 level with 63% (n = 144) followed by the post graduate student with 31.8% (n = 73) and the 100 level are 5.2% (n = 12). Hence, majority of the library users are female who are in 200-300 level.

Table 2 shows the mean and the standard deviation value for this study construct. Here, the mean variable for affect of service reveals a (M = 4.4192, SD = 2.65115) value. While variable for library place shows a mean value of (M = 5.3304, SD = 0.92732). Information control variable shows a (M = 4.5983, SD = 2.86892) value, usage variable has (M = 6.3904, SD = 2.19267) and satisfaction variables shows (M = 6.4585, SD = 2.12358). From this analysis, it is observed that satisfaction has the highest mean value while information control variable has the highest standard deviation. Therefore, availability and control of information has a high effect on the satisfaction level and experience of the library users.

**Reliability assessment:** To assess the reliability of research construct, internal consistency of measures were assessed with the Cronbach's alpha coefficients and exploratory factor analysis using principal axis factoring with varimax rotations. For this study, the cronbach's alpha coefficients range is from 0.859-0.933 which can be said to be very and consistent because it is >0.70 as recommended by Hair. This shows that constructs in this study have adequate internal consistency.

According to Cavana, the dimensions of research construct can be assessed with exploratory factor

Table 1: Frequency distribution of respondents

Demographic categories	Frequency	Percent	Cumulative (%)
<b>Gender</b>			
Male	110	48.0	48.0
Female	119	52.0	100.0
Total	229	100.0	-
<b>Profession</b>			
Student	229	100.0	100.0
Total	229	100.0	-
<b>University</b>			
Covenant University	229	100.0	100.0
Total	229	100.0	-
<b>Student level</b>			
100 Level	12	5.2	68.2
200-300 Level	144	63.0	31.8
PG	73	31.8	100.0
Total	229	100.0	-

Table 2: Mean and standard deviation analysis

Constructs	Mean	SD
Affect of service	4.4192	2.65115
1	4.2100	3.22700
2	4.2400	3.22700
3	4.3600	3.30800
4	4.4300	3.17500
5	4.6100	3.26400
6	4.5600	3.17200
7	4.3600	3.14200
8	4.3100	3.32000
9		
Library place	5.3304	2.92732
1	5.6500	3.30000
2	5.1700	3.31200
3	5.1700	3.33100
Information control	4.5983	2.86892
1	5.0000	3.39600
2	4.8900	3.35400
3	5.1400	3.25800
4	4.7600	3.18700
Usage	6.3904	2.19267
1	6.4000	2.47300
2	6.4800	2.52800
3	6.5700	2.52700
4	6.1000	2.55900
5	6.4000	2.40700
Satisfaction	6.4585	2.12358
1	6.2500	2.44900
2	6.5500	2.31600
3	6.5800	2.32100

analysis, using principal component analysis. From Table 3, the result of exploratory factor analysis shows 0.940 KMO (Kaiser Meyer Olkin) value for all the variables which does not exceed 0.5 and 1.0 value of 0.6 as recommended by Byrne (2013). Therefore, this result signifies an appropriate factor analysis value for this research. The statistical test reveals a value of p = 0.000 for Bartlett test of sphericity which can be said to be acceptable while the df = 253 value. This indicates a supportive correlation of the correlation matrix. Table 3 also showed the factor loading scores, which exceed the threshold of 0.50 and there was no indication of cross loading.

**Measurement model:** Convergent validity of the constructs is assessed by examining the standardized factor loadings of measurement variables and Average Variance Extracted (AVEs) of the constructs which should exceed the recommended value of 0.5 for satisfactory convergent validity for a construct (Hair *et al.*, 2010). The values of Average Variance Extracted (AVEs) for the constructs in this study has shown in Table 4, exceeds the recommended threshold and rang from 0.702-0.845. Convergent validity can also be assessed by calculating the Composite Reliability (CR) which should exceed the recommended cut-off of 0.7 (Chin, 1998). The Composite Reliability (CR) for the constructs in this study has shown in Table 4 exceeds the threshold of 0.7 ranging

from 0.861-0.927. All of the composite reliability CR values were greater than the Average Variance Extracted (AVE) values (Byrne, 2013). To achieve satisfactory discriminant validity, the square root of the Average Variance Extraction (AVE) for a particular construct should be larger than the correlations between it and the other constructs (Hair *et al.*, 2010). And, also the values for MSV and ASV were lower than the AVE values, thus confirming the discriminant validity of the model as recommended by. It suffices to say that the theoretical constructs in this research study have demonstrated adequate convergent and discriminant validity based on the above criteria as shown in Table 4.

This study adopts the Structural Equation Modeling (SEM) technique which involves a two-step approach (measurement and structural model) in ascertaining the nature of the relationship between theoretical constructs and measured variables. The measurement model developed was assessed using the goodness-of-fit indices. The result as shown in Table 5 indicates that the measurement model has adequate fitness as all goodness-of-fit indices normed  $\chi^2/df$ , GFI, CFI, NFI, RMSEA exceeded the recommended threshold (Hair *et al.*, 2010).

Based on result of the goodness-of-fit indices, it is considered that measurement model demonstrates adequate fitness which provides a platform for the development and assessment of the structural model.

**Structural model:** After validating the measurement model, analysis of the casual structure of the research model was tested. The goodness of fit indices was conducted and the result showed that chi-square/df (cmin/df) value was 1.87, the Comparative Fit Index (CFI) value was 0.980, the Adjusted Goodness-of-Fit Index (AGFI) value was 0.907, the Non Fix Index (NFI) was 0.961 and the Root Mean Square Error of Approximation (RMSEA) value was 0.066. All values of the goodness of fit index exceeded the recommended threshold as identified by Hair *et al.* (2010). Based on the result of the goodness of fit indices for the structural model, the

Table 3: Result of exploratory factor analysis

Factor name (variable)	Factor loading	Eigen-value	Variance Explained (%)	Alpha value
<b>Affect of Service (AS)</b>				
1	0.692	5.864	20.636	0.933
2	0.850	-	-	-
3	0.702	-	-	-
4	0.690	-	-	-
5	0.660	-	-	-
6	0.582	-	-	-
7	0.745	-	-	-
8	0.808	-	-	-
9	0.749	-	-	-
<b>Library Place (LP)</b>				
1	0.721	2.769	17.569	0.859
2	0.770	-	-	-
3	0.751	-	-	-
<b>Information Control (IC)</b>				
1	0.776	2.192	14.480ssss	0.909
2	0.783	-	-	-
3	0.743	-	-	-
4	0.744	-	-	-
<b>Usage (USG)</b>				
1	0.854	1.202	12.016	0.925
2	0.856	-	-	-
3	0.871	-	-	-
4	0.796	-	-	-
5	0.846	-	-	-
<b>Satisfaction (SAT)</b>				
1	0.822	1.133	11.568	0.881
2	0.846	-	-	-
3	0.834	-	-	-

KMO measure of sampling adequacy = 0.940; p = 0.0000 (p<0.05); df = 253; Cumulative percentage rotation sums of squared loadings = 70.063

Table 4: Convergent and discriminant validity

Discriminant	CR	AVE	MSV	ASV	Constructs					
					USG	AS	LP	IC	SAT	
USG	0.927	0.845	0.717	0.270	0.919					
AS	0.938	0.702	0.627	0.368	0.292	0.838				
LB	0.861	0.767	0.674	0.377	0.245	0.788	0.876			
IC	0.910	0.767	0.715	0.405	0.298	0.838	0.846	0.876		
SAT	0.881	0.845	0.712	0.258	0.910	0.253	0.244	0.250	0.919	

The square root of the Average Variance Extracted (AVE) are represented on the diagonal of the constructs

structure of each parameter in the structural model can be confirmed using the path standardized coefficient, t-value (CR) and p-value (significance). Table 6 shows the details of the result.

The result of the hypothesized path in the research model as represented in Table 6, shows that library service quality has positive and significant effect on library usage with the path coefficient of 0.318 which is statistically significant at 0.000 p-value ( $t = 4.578$ ). The result of the direct effect of library service quality on library usage revealed a significant positive effect with path coefficient of 0.316 ( $t = 4.554$ ,  $p = 0.000$ ). This indicates that library service quality has both direct and total significant positive effect on library usage. Based on this result,  $H_1$  is supported that is library service quality has positive and significant effect on library usage.

Analysis of the second hypothesis reveals that though library service quality has direct significant positive effect on satisfaction with a path coefficient value of 0.302 ( $t = 4.198$ ,  $p = 0.000$ ), the total effect proved contrary. The result of library service quality on satisfaction shows a total path coefficient of 0.303 with t-value of 0.289 and p-value of 0.773 which is not statistically significant. Based on this result  $H_2$  is not

supported that is library service quality does not have significant effect on satisfaction when assessed using the total path standardized coefficient.

The result of the test of  $H_3$  revealed that library service usage has a significant positive effect on satisfaction with a direct path coefficient of 0.916 ( $t = 14.763$ ,  $p = 0.000$ ) and total path coefficient of 0.915 ( $t = 14.445$ ,  $p = 0.000$ ). This indicates that library service usage has a significant positive effect on satisfaction making  $H_3$  to be supported.

The result for test of  $H_4$  revealed that library service quality has a significant effect on satisfaction through library usage. The direct effect (Path coefficient 0.294,  $t = 14.763$ ,  $p = 0.000$ ) and total effect (Path coefficient 0.294,  $t = 14.763$ ,  $p = 0.000$ ) of library service quality on satisfaction through library usage is both statistically significant. Therefore,  $H_4$  is supported. Figure 2 shows the output of structural path for the research hypothesis for the study.

This research has focused primarily on how library service quality impacts on user's perceptions of the library services rendered and as a measure of how perceived library service has influenced library usage and satisfaction.

Table 5: Fitness measure for measurement model

Fit indices	Criteria	Results
$\chi^2/df$	<3.00	2.080
GFI	0.90	0.942
AGFI	0.85	0.905
CFI	0.95	0.972
NFI	0.90	0.920
RMSEA	<0.08	0.069

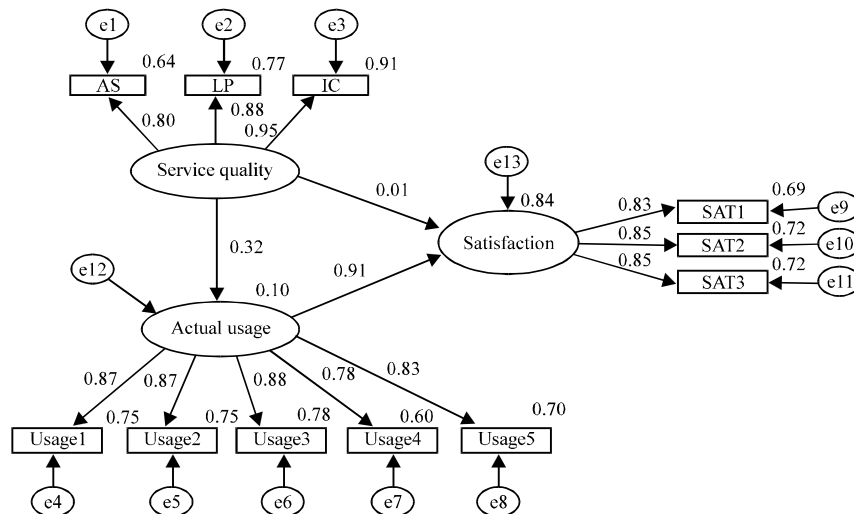


Fig. 2: Measurement and structural path of the research model

Table 6: Path coefficient and critical values of the research hypothesis

Hypothesized path	Path standardized coefficient			t-value	Sig.	Decision
	Direct	Indirect	Total			
H <sub>1</sub> : Library service quality-Library usage	0.316 (4.554)***		0.318	0.578	0.000	Supported
H <sub>2</sub> : Library service quality-Supported	0.302 (4.198)***		0.303	0.289	0.773	Not-supported
H <sub>3</sub> : Library usage-Supported	0.916 (14.763)***		0.915	14.445	0.000	Supported
H <sub>4</sub> : Library service quality usage-Supported		0.294 (14.763)***	0.918	14.895	0.000	Supported

Figures in bracket indicate t-value, asterisk (\*\*\*) represents p-value significant at 0.001

### CONCLUSION

This study applied and adopted the LibQual+™ instrument to measure the perceived service quality of university library. Based on the findings of this study, it is hereby concluded that library service quality has a direct significant positive effect on library usage, library service quality has significant positive direct effect on user satisfaction and when using the total effect, library service quality has insignificant effect on user satisfaction. This study concludes that perceived service quality has both direct and indirect significant positive effect on user’s satisfaction. Perceived library service quality has indirect effect on user’s satisfaction through library usage.

The LibQUAL+™ survey is a useful tool for assessing users’ perceptions about libraries as it assesses the core functions and areas of library service offering. Libraries should consider the use of the survey result from LibQual instrument as a major component of library assessment strategy. Other instruments focusing on library functions and resources should also be employed to elicit information and feedback about the effectiveness of specific library resources, services delivery process, assess and speed of online resources and other complementary assessment information should also be considered along with the results from the LibQUAL+™ survey in other to get robustinsight/perspectiveto library services.

### RECOMMENDATIONS

The continuous assessment of perceived library service quality is necessary in most library service academic institutions where the goals are to provide and ensure improved information service access and delivery of andacademic resources necessary for learning and to facilitate research. With these functions, it has become paramount for library service institution to evaluate user’s satisfaction on perceived and actual library service quality received.

Findings from such study could be used to formulate corrective measures to improve library service been offered and to maintain certain standard of library service

quality. Based on this study, library user expectations appear to play a critical role in user responses to the LibQUAL+™ survey. User expectations are often based in individual experiences with libraries however, practitioners might consider the potential role of library marketing or public relations efforts in other to influence user expectations, learn more about the needs and expectations of library service user’s and subsequently, help to shape the delivery of services quality appropriately.

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