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RELIABILITY AND VALIDITY OF A LIBQUAL SCALE: A CASE OF A PRIVATE UNIVERSITY IN KENYA

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RELIABILITY AND VALIDITY OF A LIBQUAL SCALE: A CASE OF A PRIVATE UNIVERSITY IN KENYA

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Abstract

This study focusses on assessing the reliability, validity and dimensionality of LibQUAL scale in a private university in Kenya, a developing country. It also investigates the perception of the library users towards the services provided. This research used the survey method for collecting data from users of the Library. Library service quality was measured by using 22 items taken directly from the 2004 version of the LibQUAL scale. Altogether, 361 questionnaires were distributed and 254 completed questionnaires were used in the final analysis. Cronbach's Alpha values of each construct confirmed that a good reliability exists with the data. Principle component analysis was employed to determine the important factors of LibQUAL scale. Out of the 22 factors, only 16 were found to satisfy requirements for testing reliability and validity. As a result, a modified LibQUAL was adopted for further analysis. Three service quality components were identified through the exploratory and confirmatory factor analysis as in line with other studies. The three were: affect of service, information control and library as a place. A structural equation model was developed showing the relationships between the three components and library service quality and all the three were significant.

Keywords: Library Service Quality; Scale Validation; LibQUAL; Developing Country; Kenya

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Introduction

The issue of quality of services in different economic sectors have been studied for some time. The need for quality service delivery by service providers underlies the focus of understanding the customers' expectations and how indeed they assess service quality. Service quality assessment frameworks have been developed for different service environments. Such an environment is the quality of academic libraries services. Ranking and performance of higher learning institutions is affected by the nature of support given to both students and faculty. This is because such ranking is based on research publications from an institution. Critical to supporting a research environment is the library which is seen as the citadel of research.

The role of libraries in research has been widely enumerated. Kroll and Forsman (2010) indicated that academic libraries have a role in supporting research by developing and aggregating discipline-based tools, providing customized services, and emphasizing user-centered services. With the growth and development of technology, the role of libraries in institutions is evolving (Borgman, 2010). The performance of libraries has been deemed to be closely tied to the quality of services delivered. Due to the developments in higher education, academic libraries are facing two major threats from a global digital environment and increasing competition. According to Cullen (2001), libraries must improve the quality of their services in order to survive. It was based on this imperative that researchers focused on identifying appropriate tools to measure the performance of libraries, especially in relation to service delivery.

Historically, the performance of a library was traditionally assessed in terms of its collection and measured by the size of the library's holdings and various counts of its uses. Other universities measured success based on the number of users. These measures solely on collections and users have become obsolete and as such the emergence of more appropriate measurement frameworks. Libraries should thus be assessed based on quality of services delivered with an approach that considers users' needs in order to meet and exceed their levels of satisfaction in the services given.

Literature Review

Quality is defined as "fitness for use" (Juran, 1974) in user-based approach and "conformance to requirements" (Crosby, 1979) in manufacturing-based approach. There are five main approaches that identify the definition of quality (Garvin, 1984): the transcendent approach of philosophy; the product-based approach of economics; the user-based approach of economics, marketing, and operations management; the manufacturing-based; and, value-based approaches of operation management. In services, the quality of service is described as the extent to which a service meets customers' needs or expectations (Lewis & Mitchell, 1990; Wisniewski & Donnelly, 1996). Service quality can thus be defined as the difference between customer expectations of service and perceived service. If expectations are greater than performance, then perceived quality is less than satisfactory and hence customer

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dissatisfaction occurs (Parasuraman et al., 1985; Lewis & Mitchell, 1990).

The SERVQUAL methodology developed by Parasuraman et al. (1988) was widely used in many sectors to measure the level of service quality. Whereas it was deemed to focus more on the for profit organization (Rehman, Kyrillidou & Hameed, 2014), and due to lack of another tool, most libraries had adopted SERVQUAL as a tool to measure library service quality. For long, libraries measured service quality using different modifications of SERVQUAL (Cook & Heath, 2001). However, since libraries function differently from business entities, SERVQUAL and other service measurement tools were deemed not to adequately measure the level of library services (Quinn, 1997). In SERVQUAL scale, service quality was defined as "difference between customers' perceptions and expectations" using disconfirmation/confirmation theory (Rehman et al., 2014). The psychometric properties of the SERVQUAL scale have been the subject of considerable research in recent times especially due to its disconfirmatory approach to measuring of service quality (Cronin & Taylor, 1994). It was for that reason that Cronin & Taylor developed the SERVPERF mode from the SERVQUAL model by dropping the expectations and measuring service quality perceptions just by evaluating the customer's overall feeling towards the service. The SERVPERF however did not adequately address the nonprofit nature of libraries as well.

As a result of the deficiencies in SERVQUAL, the Association of Research Libraries (ARL) in collaboration with faculty members at the Texas A&M University developed a tool to measure library service quality. The tool took into consideration the dimensions of services in SERVQUAL and included new dimensions to formulate LibQUAL to measure the level of service quality in libraries (Cook, 2001). It was on this basis that the developers of LibQUAL begun with the five dimensions of SERVQUAL (Tangibles, Reliability, Responsiveness, Assurance, and Empathy) (Parasuraman, Berry, & Zeithaml, 1991). The use of SERVQUAL in the academic sector did not yield the theoretical five dimensions of services (Thompson, Cook, & Heath, 2001). The LibQUAL instrument measures library service quality through 22 core questions on three dimensions: affect of service, information control and library as place (Rehman et al., 2014). The underpinning philosophy of LibQUAL is based on the service quality orientation that only customer's judge quality, and all other judgments are essentially irrelevant (Zeithaml et al., 1990). The current three-factor design is purported to represent Affect of Service (9 items), Information Control (8 items), and Library as Place (5 items) (Thompson, Kyrillidou, & Cook, 2008).

The Affect of Service dimension asks respondents to rate their interactions with library staff, in particular, about their general helpfulness and competence. Affect of Service concerns the human dimension of service quality (ARL, 2012) and is operationalized with nine questions about user interactions with staff. Aspects of this dimension include user perceptions of staff helpfulness, competency, courteousness, dependability, and care for library users (Rehman et al., 2014).

The Information Control dimension includes questions that address content scope, and ease of access. The Information Control is defined as "whether users are able to find the required information in the library in the format of their choosing, in an independent and autonomous way" (ARL, 2012). The eight questions created to represent this construct involve having the right print and electronic materials in the collections, being able to access desired resources independently, and the extent to which access tools are modern and intuitive (Rehman et al., 2014).

The third LibQUAL dimension, Library as Place, addresses user desires for convenient and inviting physical surroundings while working. Library as Place is defined as the physical environment of the library as a place for individual study, group work, and inspiration (ARL, 2012). The five LibQUAL questions assess the availability of both quiet and community space, the comfort and welcoming feel of space, and the suitability of space for study, learning, and research (Rehman et al., 2014). Many academic libraries have been changing their spaces radically to keep pace with the rapid increase in online information, including creating "learning commons" spaces to support document and media production (Accardi, Cordova, & Leeder, 2010; Seeholzer & Salem, 2010) and adding technology, group study spaces, and coffee shops.

Although LibQUAL has been used to collect data from more than 1.5 million library users from more than 1,200 institutions in about 26 different countries (Rehman et al., 2014), there has been criticisms due to the fact that it was developed, tested and validated in the US which has a different environment and culture from most other parts of the world. Due to the cultural differences, it cannot be assumed that a tool can have a global application without any modifications as library services development may be dependent on the level of a country's economic growth. For example, the services at a library in USA will be different from those of an African or Asian country. As a result, several researchers have tested the validity and reliability of LibQUAL in different environments. Whereas the tool has been found fit in most countries, a study in Pakistan found that one of the 22 items was cross loading and thus was omitted. Further tests confirmed a 21 item modified tool as appropriate for assessing library service quality in Pakistan (Rehman et al., 2014). Similarly, in South Africa in a study by Moon (2007) some respondents indicated that some statements under affect of service were ambiguous and vague and thus the need to review the tool to fit within the South African context.

LibQUAL has been widely used in the world but scanty information on its use in Africa. Other than South Africa and Egypt, there are no other documented studies of use of LibQUAL in other African countries. This study was aimed at conducting a pilot study to determine the reliability and validity of LibQUAL in Kenya with a view of a further nationwide detailed assessment of university libraries in Kenya.

Research Questions

The study addresses two research questions:

1. Is the LibQUAL scale applicable to academic libraries in Kenyan institutions of higher learning?
2. What are the most critical library service quality dimensions?

Research Methodology

Research Design

For the current study, a cross-sectional descriptive research design was used. Cross-sectional study is defined as an observational research type that analyzes data of variables collected at one given point of time across a sample population. A survey method was used to collect the data on a self-reporting questionnaire.

Sample and Sampling Procedure

The sample for this study was drawn from students from a Private University in Nairobi County, Kenya. From a population of about 6,000 students in the Nairobi Campus, using Krejcie and Morgan (1970) sample determination formula, a sample size of 361 was used. A convenient sampling method was used to gather data from both graduate and undergraduate students in the university. The convenient sampling method was used in order to ensure that those who responded were only students who had been in the university for at least 1 year and thus had familiarity with the university library services.

Data Collection Methods

For the purpose of this study, a structured questionnaire with two parts was developed to collect primary data. Part one collected demographic data while part two collected data on perception of library service quality. Part two was an adaptation of the LibQUAL scale developed through collaboration between the Association of Research Libraries (ARL) and Texas A&M
University libraries. LibQUAL is a well-known and recognized instrument that libraries use to solicit, track, understand, and act upon users' opinions of service quality (ARL, 2011).

The questionnaire contained only structured questions, using a multiple-item Likert scale with options ranging from "strongly disagree" to "strongly agree." Prior to the data collection, the questionnaire was pre-tested by conducting a pilot study to identify and eliminate possible interpretation problems (to prevent response error) and to assess the reliability of the scale (Kothari, 2004). From the pilot study, there were no changes that were proffered on the questionnaire developed.

Analysis Techniques

According to Kyrillidou et al. (2004), in order to assess the psychometric properties of an instrument, a researcher must follow a certain procedure. This procedure involves assessing of standard factor structure of instrument, reliability and correlation analysis, convergent and discriminant validity, and construct validity. In the current study, in order to meet the study objectives, these procedures were followed.

Reliability of LibQUAL Scale

Reliability is a prerequisite for validity, and both are essential characteristics of psychometric scales (Kline, 2000). The reliability and validity of the data instrument is very important so that reliable and valid findings can be drawn from that data (Rehman et al., 2014). Researchers and practitioners should

always perform validity and reliability analysis on the data used and should preferably use tools with known and published results regarding the validity and reliability unless they aim at establishing the measurement of a new concept (Thompson et al., 2008).

Studies on the reliability and validity of this scale conducted in different nations have unearthed considerable high levels of reliability and validity (Cook, et al. 2001; Thompson & Cook 2002; Thompson, Cook, & Heath 2003; Thompson, Cook and Kyrillidou 2005; Thompson, Cook and Kyrillidou 2006; Thompson et al., 2008); thereby confirming the psychometric integrity of the scale (Rehman et al., 2014). Studies have also consistently proved LibQUAL to be consistently reliable in different cultural environments in different countries. In different studies, reliabilities computed have ranged from 0.8 to 0.96 for the different subscales of the LibQUAL (Fagan, 2014; Kieftenbeld & Natesan, 2013; Thompson et al., 2008).

Validity of LibQUAL Scale

Validity, often called construct validity, refers to the extent to which a measure adequately represents the underlying construct that it is supposed to measure. It is about the soundness of the inferences based on the scores and determines whether the scores measure what they are supposed to measure, but also do not measure what they are not supposed to measure (Kline, 2004). Empirical assessment of validity examines how well a given measure relates to one or more external criterion, based on empirical observations. This type of validity is called criterion-related validity, which includes four sub-types: convergent, discriminant, concurrent, and predictive validity. The most common and widely used method to confirm the validity of data is correlational analysis and factor analysis. For testing the construct validity of the scale, confirmatory factor analysis (CFA) was performed using the structural equation modeling (SEM). According to Saffu & Walker (2006) CFA generate measures of overall fit of a given measurement model and provides useful information indicating how well convergent and discriminant validity are achieved.

Dimensionality

Due to the nature of most scales, an appropriate scale must be able to conform to some dimensions. This allows for the dimensions to be used in further analysis. Factor analysis has been recommended as a technique to assess a scale's construct dimensionality. The principal component analysis was used as the extraction method. The rotation method used was the oblique rotation, specifically Promax (Tabachnick & Fiddell, 2007; Thurstone, 1947) with Kaiser Normalization as recommended. After the factor analysis, in order to test the fit of the suggested model to the Kenyan situation, a confirmatory factor analysis (CFA) was performed.

Analysis And Results

Sample Demographic Profile

As indicated before 361 questionnaires were distributed with 254 (70.1%) returned and usable. From the responses, 40% of respondents were males while 60% were females. In terms of the distribution of the respondent's age, 5.5% were below 20 years; 72% between 20 – 30 years; 21% between 31 – 40 years; and, 2.4% over 40 years. In terms of level of study, 63% were

undergraduate, 32% masters and 5% doctoral students as indicated in Table 1 below.

Table 1
Sample Demographic Profile

Gender	**Frequency**	**Percent**
Male	102	40
Female	152	60
Total	**254**	**100**
Age Category	**Frequency**	**Percent**
Below 20 Years	14	5.5
20 - 30 Years	182	71.7
31 - 40 Years	52	20.5
Over 40 Years	4	2.4
Total	**254**	**100**
Occupation	**Frequency**	**Percent**
Undergraduate	160	63
Graduate (Masters)	80	32
Post Graduate (Doctoral)	14	5
Total	**254**	**100**

Reliability Assessment of LibQUAL

In order to undertake further analysis, it is imperative to assess the reliability of a scale. According to Hair et al. (2010), reliability refers to the assessment of the degree of consistency between multiple measurements of a given construct. Following in the steps of previous researchers who assessed the validity, reliability and dimensionality of the scale's constructs (Thompson et al., 2008; Rehman et al., 2014), in order to assess the consistency of the scale, Cronbach's alpha was used (Hair et al., 2010). This research achieved a Cronbach alpha of 0. 91. According to Nunnally (1978), a Cronbach alpha of 0.70 is acceptable. In determining the adequacy and suitability of the sample for analysis, the Kaiser-Meyer-Olkin (KMO) measure was used. In this study, KMO test was 0.857 fulfilling the requirements for adequacy of data for factor analysis (Field, 2009). The Bartlett's test of sphericity was also used to test if the sample was from a population with equal variances (homoscedasticity or homogeneity of variances). It is also used to verify the assumption that variances are equal across groups or samples before undertaking an analysis (Snedecor & Cochran, 1989). Data for this study attained the test's requirements (less than 0.05) by achieving significance ($p < 0.001$, chi-square of 1,028.11, with 120 degrees of freedom).

Exploratory Factor Analysis

Exploratory factor analysis was undertaken to examine the construct's scale dimensionality. Factors were extracted based on Kaiser's criterion of Eigenvalues equal to or greater than one and screen test plot. Using both criteria a three factor solution emerged accounting for a total variance of 63%. The rotation converged in 5 iterations. In identifying the items loading on each component, 6 items were found not to satisfy the requirements for inclusion as their factor loadings were below the recommended level. The 6 items had cross loadings on other factors. In order to resolve the problem of cross loading, they were removed from the analysis to select final items with no cross loading. As a result,

out of the 22 items in the original LibQUAL tool only 16 were retained for further analysis. Just like in other library quality service studies, the current study supported their findings that the scale is multidimensional with three distinct dimensions. Based on the items in each component, dimension 1 had items related to issues of affect of service; dimension 2 items related more to information control; and, dimension 3 items were more about library as a place. Table 2 below provides the various items and their factor loadings.

Table 2
Factor Analysis Component Loadings

Item Code	Scale Items	Component		
		1	2	3
AS3	Library employees are consistently courteous	.695		
AS4	Library employees are always ready to respond to users' questions	.792		
AS5	Library staff have the knowledge to answer user questions	.850		
AS6	Library employees deal with users in a caring fashion	.784		
AS7	Library employees understand the needs of their users	.790		
AS8	Library employees are willing to help users	.854		
AS9	Library employees are dependable in handling library services users' problems	.675		
IC1	I can access library electronic resources from my home or office		.840	
IC2	The library Web site enables me to locate information on my own		.840	
IC3	The library has the printed library materials I need for my work		.626	
IC4	The library has the electronic information resources I need		.518	
LP1	Library has space that inspires study and learning			.765
LP2	Library has is a quiet space for individual activities			.847
LP3	Library is a comfortable and inviting location			.842
LP4	Library has is an ideal getaway for study, learning, or research			.799
LP5	Library has community space for group learning and group study/discussion			.697

Descriptive Statistics

As indicated before, 254 individuals responded to the survey. The descriptive analysis indicated a mean score for library service quality as 3.12. The highest mean score for the factors was posted by affect of service (2.10), followed by information control (1.91) and lastly library as a place (1.51). Other descriptive statistics including the standard deviation, the skewness and the kurtosis for the latent variable and factors. From the analysis, the data for the study was found to achieve normality ad therefore appropriate for further analysis (See the table below).

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Table 3: Descriptive Statistics

	Mean	Std. Deviation
Affect of Service	2.10	.65
Information Control	1.91	.61
Library as a Place	1.51	.54

Assessing Validity of LibQUAL Measures

After EFA, it has been recommended that scale validity is undertaken. In order to assess a scales measures, Confirmatory Factor Analysis (CFA) is recommended. CFA is appropriate to test both discriminant and convergent validity of factors (Jöreskog, 1969). CFA analysis was undertaken using SPSS AMOS software. According to Campbell and Fiske (1959) convergent validity is the degree of confidence that a trait is well measured by its indicators while discriminant validity is the degree to which measures of different traits are unrelated.

Convergent Validity

Fornell and Larcker (1981) developed a criterion that is used in assessing the degree of shared variance among variables. Accordingly, the convergent validity of the measurement model can be assessed by the Average Variance Extracted (AVE) and Composite Reliability (CR) (Alarcon & Sanchez, 2015). On the other hand, AVE measures the level of variance captured by a construct versus the level due to measurement error. AVE values above 0.5 are acceptable. In this paper, the AVE for the three factors were determined and assessed against their correlation with the others. In this case, in order to achieve convergent validity, the AVE had to be above the construct's correlation with other constructs (Gefen et al., 2000). In testing of LibQUAL Scale, the AVE scores obtained were: 0.53 (library as a place), 0.56 (affect of service) and 0.50 (information control). All the loadings were significant. On the other hand, all the factors recorded a CR of above 0.7. These results indicate that the LibQUAL scale had achieved convergent validity.

Table 4: Convergent and Discriminant Validity Measures

Factors	Composite Reliability (CR)	Average Variance Extracted (AVE)	Maximum Shared Variance (MSV)
Library as a Place	0.856	0.545	0.203
Affect of Service	0.900	0.563	0.372
Information Control	0.765	0.503	0.372

Discriminant Validity

According to Fornell and Larcker (1981), discriminant validity can be assessed by comparing the amount of the variance captured by the construct (AVE) and the shared variance with other constructs (maximum shared variance – MSV)

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(Alarcon & Sanchez, 2015). According to Henseler, Ringle, and Sarstedt (2015), Fornell and Larcker suggest that discriminant validity is established if a latent variable account for more variance in its associated indicator variables than it shares with other constructs in the same model. Henseler et al. (2015) stated that, to satisfy this requirement, each construct's average variance extracted (AVE) must be compared with its squared correlations with other constructs in the model.

According to Hair et al. (2010), for discriminant validity, MSV must be lower when compared to AVE for all the constructs. In the testing the LibQUAL scale, and as indicated in the table below, all the 3 factors MSV were lower than the AVE and thus achieving the required thresholds for discriminant validity. In this paper, as presented in Table 5 and Figure 1 below, all the 3 factors were significantly correlated at $p < 0.05$ level.

Table 5: Discriminant Validity – Correlation Matrix

Factors	Library as a Place	Affect of Service	Information Control
Library as a Place	0.739		
Affect of Service	0.452***	0.750	
Information Control	0.358***	0.610***	0.709

*** $p < 0.05$

The correlation between affect of service and library as a place impact was estimated at 0.45; while that of information control and library as a place was 0.36; and, that of information control and affect of service was 0.61. All were significant at $p < 0.001$.

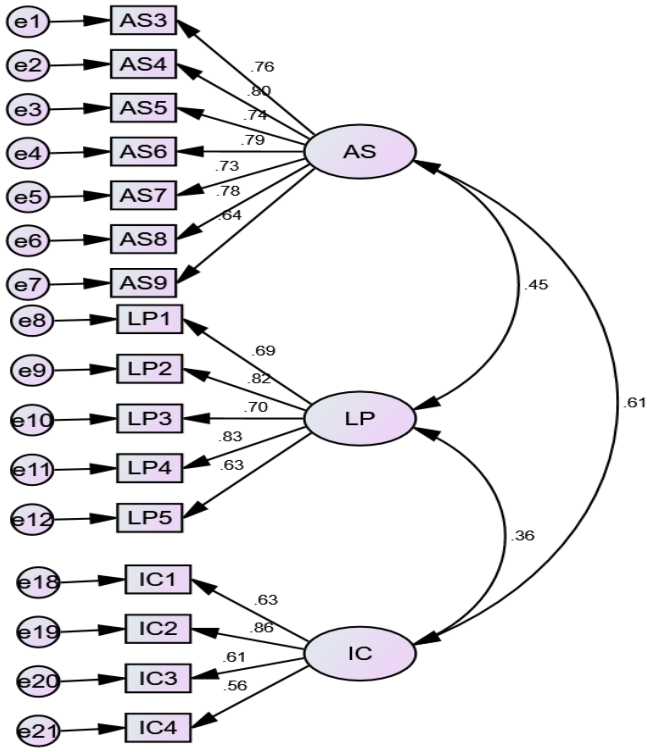

Figure 1: LibQUAL CFA Path Analysis

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Model Fitness Assessment with Structural Equation Modelling (SEM)

The scale was also subjected to SEM. Under this, various fit indices were used to test the model fit. The chi-square, degrees of freedom, the root mean square error of approximation (RMSEA), goodness of fit index (GFI), comparative fit index (CFI) are measures recommended to be used (Sharma et al., 1995; Hair et al., 2010). Hair et al. (2010) posits that there is no absolute value for the various fit indices to suggest a good fit. As such, the values associated with acceptable models may vary from one situation to another situation depending on the sample size, number of measured variables, and the communalities of the factors (Quang et al., 2017). In this study, all the model fit indices were attained as explained below and provided in Table 7 below.

The Chi-Square ($\chi 2$) value is the traditional measure for evaluating overall model fit (Hooper, Coughlan and Mullen, 2008) and assesses the magnitude of discrepancy between the sample and fitted covariance matrices' (Hu and Bentler, 1999). A good model fit provides an insignificant result at a 0.05 threshold (Barrett, 2007). In assessing goodness of fit, the ratio of chi-square to degree of freedom ($\chi 2$/df) is used. According to Hooper et al. (2008), $\chi 2$/df should be less than 3 to indicate acceptable fit (Schreider, 2008). In this study, $\chi 2$/df was 1.854 indicating an acceptable fit for this model as it was less than the 3.

RMSEA has been regarded as one of the most informative fit indices by various scholars (Diamantopoulos and Siguaw, 2000) due to its sensitivity to the number of estimated parameters in the model. For the RMSEA, MacCallum, Browne, and Sugawara (1996) suggest that a RMSEA value of between 0.00 and 0.05 indicates a close model fit, a value of between 0.05 and 0.08 a reasonable fit, and a value of more than 0.08 a poor model fit. A cut-off value close to .06 (Hu and Bentler, 1999) or a stringent upper limit of 0.07 (Steiger, 2007) seems to be the general consensus amongst authorities in this area (Hooper et al., 2008). In the current study a RMSEA of 0.072 was achieved indicating a reasonable model fit.

The Goodness-of-Fit statistic (GFI) calculates the proportion of variance that is accounted for by the estimated population covariance (Tabachnick and Fidell, 2007). By looking at the variances and covariances accounted for by the model, it shows how closely the model comes to replicating the observed covariance matrix (Diamantopoulos & Siguaw, 2000). This statistic ranges from 0 to 1 with larger samples increasing its value (Hooper et al., 2008). In this study, a GFI of .91 was achieved, which was below 1.0 indicating a model fit.

The Comparative Fit Index (CFI) is an index which takes into account sample size (Byrne, 2001) and performs well even when sample size is small (Tabachnick & Fidell, 2007). It assumes that all latent variables are uncorrelated and compares the sample covariance matrix with this null model (Hooper et al., 2008). Its values range between 0.0 and 1.0 with values closer to 1.0 indicating good fit (Hooper et al., 2008). The CFI of this study was .91 indicating a good model fit.

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Table 6: Goodness of Fit Indices

Measurement	Index
Chi- square ($\chi 2$)	182.216
Degree of freedom	101
$\chi 2$/df	1.854
RMSEA	.072
GFI	.912
CFI	.910

The model estimates were also considered. All item loadings were significant at $p < 0.001$. The critical ratios (CR) for each path exceeded the threshold values required. AS had a CR of 6.034; LP factor 4.309; and, IC 4.727 and significant at $p < 0.001$. When the critical ratio (CR) is > 1.96 for a regression weight, that path is significant at the .05 level. This is indicated in Tables 7 below.

The results show that Library Service Quality (LSQ) has a significant and positive impact on AS, LP and IC. AS was positively related to LSQ with unstandardized coefficient of 0.605; LP was positively related to LSQ with unstandardized coefficient of 0.295; and, IC was positively related to LP with unstandardized coefficient of 0.482 as indicated in the table below. Based on the regression coefficients, an increase in AS, LP as well as IC will have a corresponding change in LSQ. The results of SEM analysis are presented in the Table 7 below and Figure 2.

Table 7: The Regression Path Coefficient and Its Significance

Path			B	Beta	S.E.	C.R.	P
AS	<---	LSQ	0.605	0.877	0.1	6.034	***
LP	<---	LSQ	0.295	0.515	0.068	4.309	***
IC	<---	LSQ	0.482	0.696	0.102	4.727	***

Table 8 shows the effect of Library Service Quality (main construct) on all sub-constructs are significant (p>0001).

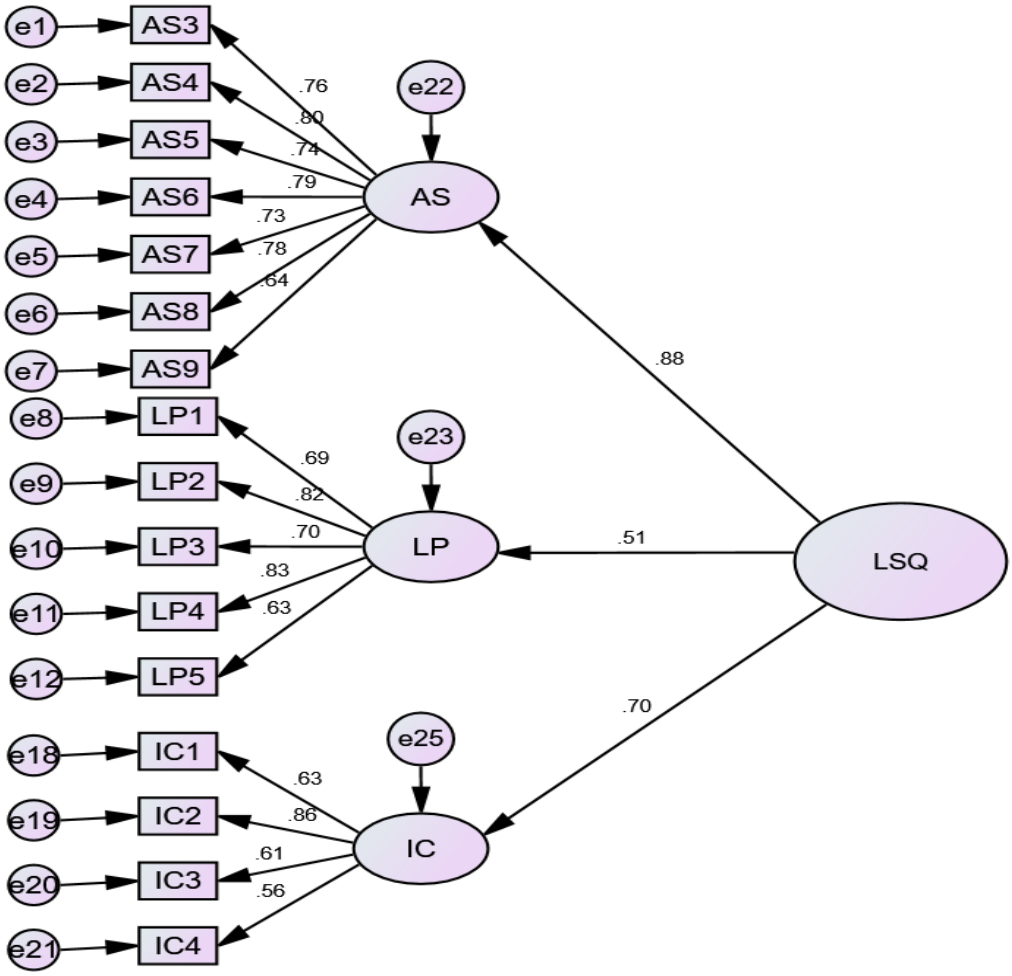

Figure 2: LibQUAL SEM Path Analysis

Conclusions And Implications

This study was driven by two broad research questions. One was to evaluate the psychometric properties of the LibQUAL scale in order to determine its applicability in Kenya, a developing country. The second research question was to determine the most critical library service quality dimensions from a Kenyan perspective.

Conclusions

On the first objective, the validity, reliability and dimensionality of the 22 item LibQUAL scale was investigated. From the 22 items, only 16 were found to be fit for use in a tool measuring library service quality in Kenya. A number of items were found not to be relevant and therefore deleted from the tool. This could be as a result of contextual factors between the developed world where the original tool was developed and Kenya a developing country. Some items in a developed country may not make sense in

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a developing country and thus the need to test out the psychometric measures of such a tool. In terms of validity, the revised LibQUAL scale was found to be valid as it fulfilled all the validity tests. Likewise, the reliability tests performed found the revised LibQUAL scale to be reliable. For the dimensions, like other studies done in the developed countries that found LibQUAL scale to be multi-dimensional, the current study similarly found the scale to be multidimensional with three dimensions. In terms of the second research question, the results indicated that on the overall the respondents were satisfied with the level of service quality in the university library. The highest scoring dimension of library service quality was Affect of Service, followed by Information Control and lastly Library as a Place.

Implications

The findings from this study can inform practice and policy. It also contributes to the body of knowledge especially in relation to the LibQUAL scale usage in a developing country. In terms of practice, libraries can learn from this study when they want to measure the level of service quality. The modified validated tool can be used to measure the level of service quality as it was found to satisfy both validity and reliability tests as well as conforming to the three dimensional aspects of library service quality. In addition, the practitioners can use this instrument with confidence for assessment of service quality as it was found reliable and valid in the Kenya context. The practitioners can also use this modified scale to understand the highest and lowest thresholds of their services in order to enhance their ability to implement sound service quality improvement decisions. In regards to policy, this study can inform the government of Kenya in its effort to support quality university education. The outcomes can aid in recommending a standard to be adopted by universities in assessing the quality of services provided by their academic libraries.

In regards to knowledge, this study contributes to the knowledge gap and challenges as suggested by other researchers on the need to have a localized tool. Whereas studies have been done in other parts of the world and especially the Americas, Europe and Asia to test the applicability of LibQUAL, minimal studies had been done in Africa. The challenges largely emanate from the applicability of a tool developed in a country with different levels of development and culture to a country in another context. Researchers such as Douglas and Nijssen (2003) have suggested that extreme caution should be taken when using scales developed in one country or cultural context in other environments, especially in situations where the construct being measured is likely to be culturally embedded or related to macroeconomic country characteristics. Therefore, researchers in Kenya can use the locally modified version of LibQUAL scale for scientific research.

Limitations and Future Research Areas

This study had several limitations. The study's geographical scope was Nairobi and thus focused on one university library. Furthermore, the university was a private one whose dynamics as pertaining library usage might be different from those of libraries in public universities. The views of such a specific group may not represent the general users of libraries in Kenyan

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universities. As such the geographical and sample scope would limit the generalization of the findings. The study also in measuring the level of satisfaction with library services, the study did not focus on any moderating variables that might provide different results.

Notwithstanding the above limitations, the study contributes invariably to research in an under researched area in Africa. Other researchers could focus on undertaking such a study focusing on different population and geographical scopes for comparison as well as using different libraries in universities, both public and private. Research should also be conducted in other Eastern Africa countries for validation of the tool across such a region. This would allow a better comparative analysis with those in Western and Southern Africa.

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