Validating LibWebSQ in Nigerian Academic Libraries During COVID-19 Pandemic Situation: A Step toward Retaining user Loyalty

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Abstract – **COVID-19 is starting to take an unpredictable shape, fever and cough, which used to be the classical manifestations are now missing in complaints of many patients. Hence, the fear of contracting the disease is increasing among the users. This necessitates the need for repackaging and generating alternative retrieval and reuse modes of library web-based service quality to maintain user loyalty. The main objective of this study is to validate the LibWebSQ scale and its influence on user loyalty during the COVID-19 pandemic in the context of the academic library in Nigeria. A survey method was employed using an online questionnaire to collect the data, while a random sampling technique was used to select the participants. A total of 313 samples was analyzed using AMOS statistical tool. Considerably, the findings revealed that the LibWebSQ is a reliable and significant instrument for the measurement of library web-based service quality and influence user loyalty during the COVID-19 pandemic in Nigerian academic libraries. The paper is a stark reminder of the significance of learning at a time when the COVID-19 pandemic is increasing exponentially.**

Keywords – **Academic Libraries, Service Quality, User Loyalty, COVID-19, Nigeria.**

I. INTRODUCTION

The rise of acute respiratory syndrome in Wuhan City, at the end of December 2019 signals the beginning of what is popularly known today worldwide as the COVID-19 pandemic (Cui, Li, & Shi, 2019). The COVID-19 is starting to take an unpredictable shape, and what has always looked like regular, unsuspecting conditions now turn out positive COVID-19 cases. Besides the globalization and information technology in a competitive environment, the library as a social institution with distinct nature of user expectations, aspirations, and ideologies, operates in a dynamic space to reflect the ever-changing needs and demands of their user to maintain user loyalty (Soong & Chan, 2010), particularly during the pandemic situation. Notwithstanding, the advancement in techno-savvy information urges academic libraries in Nigeria to repackage and generate alternate retrieval and reuse modes of non-print information sources. This leads to the present trend of hybrid libraries. Traditionally, service quality in libraries has been considered in terms of size, and holdings of the library (Kaur Kiran, 2010; Sahu, 2007). Also, the intrusion of technology and electronic resources into the portal of the library has posed a great challenge and competition to all sectors, especially in the field of education (Stromquist, 2002), as well as university libraries in delivering information services to their teaming users (Jeevan & Tripathi, 2008; Kumar, 2011). Which will undermine the position of libraries to retain user loyalty and consistent repeated use of the library web in the future. However, facing these challenges and competition requires effective service delivery as it is believed to have a considerable impact of web-based library service quality on user loyalty. Libraries before the advent of the web have a variation of services, but access to the web resources has improved the functionality of each of these services in a variety of ways to the current information

seekers (Babalhavaeji, Isfandyari-Moghaddam, Aqili, & Shakooii, 2010).

University libraries in Nigeria have made their presence online and students evolve in the high usage of digital information resources (Omotayo & Haliru, 2020). The web-based library service provides access to an electronic resource, online reference services, and dynamic functional searching through an array of technologies that can enhance the quality of teaching and research in the universities. Siddike, Munshi, and Mahamud (2013) describe the library web based as the essential tool used to disseminate library collections and information electronically to the entire university communities to support the educational curriculum of the university. Hence, the librarians advocate greater service quality within their profession to meet the demands of diverse users. At this unprecedented scale of COVID-19, the quality services of library web-based are considered an important element and is a major determinant of user loyalty to the library (Caruana, 2002). Hence invest now to retain user loyalty to the library particularly during the pandemic situation, is better than investing later and attract new users.

As the COVID-19 keeps changing in form and manifestation, and an end to it remains uncertain (Ladan, Haruna, & Madu, 2020). By implication, the increasing number of cases is alarming across the globe. At this stage, therefore, is the pride of academic libraries to provide access to diverse information resources. Equally, the libraries in Nigeria triggered to increase in the need of users to access the library web-based to maintain user loyalty (Covi & Cragin, 2004). To measure the library web-based is significant, but an assessment is not a one-time activity. The assessment during pandemic situations will assist librarians to use the outcome as a basis to maintain user loyalty and to justify the budget and accountability to the parent institutes (Kiran & Diljit, 2012). A well-known librarian, of Library and Information Science, Ranganathan cited in Bhatt (2011) considers users as a library's core activity. Therefore, the information professionals have to deliver the right material, at the appropriate time to the respectable users (Das & Patra, 2008). Hence, service quality provided by libraries is determined by user loyalty.

Research has been conducted on service quality delivery and the assessment of web site in selected universities in Nigeria (Dauda, 2013; Kehinde & Tella, 2012; Umar, 2012). The library service quality measurement followed the existing scale of service quality, which consists of SERVQUAL to measure the perception of users on service quality and expectation (Anantharanthan Parasuraman, Zeithaml, & Berry, 1985), the SERVPERF which was a modification of SERVQUAL, established to measure performance-only, is truly more efficient than conventional scale, the LibQUAL scale across institutional library was also adapted from SERVQUAL (Cook, Heath, & Thompson, 2000; Dash & Padhi, 2010). However, to assess the library's web-based service quality, and commensurate with the present technological advancement during COVID-19, the previous measurement instruments of library service quality are no longer applicable, nor appropriate, as a means of assessing library web-based service quality. Users' opinion is counted as a more reliable component for assessing library web-based service quality (Anantharanthan Parasuraman et al., 1985). Coupled with this, therefore, this study seeks to empirically validate the LibWebSQ scale which was developed by Kiran and Diljit, (2012), and the influence of library web-based service quality on user loyalty to the libraries during the COVID-19 pandemic situation in selected federal university libraries in Nigeria.

II. LITERATURE REVIEW

Service quality and quality in general, are accepted as multidimensional and complex (Sultan & Wong, 2010).

Different perspectives across the service industry consider service quality as a value, excellence, meeting, or exceeding expectation (Hernon & Nitecki, 2001; Zeithaml, 1988). Also is a significant predictor of behavioral outcome and user loyalty (Caruana, 2002). Service quality in the context of libraries was regarded as perceived customer attitude; customer judgment on service provided, and some depend on service performance and expectation (Hernon & Altman, 2010; Anantharanthan Parasuraman et al., 1985; Zakaria, Ahmad, & Norzaidi, 2009). Others consider it as technical and functional quality (Kang, 2006). However, during organizational interactions, this entails the process of service delivery and outcome.

Lee and Teh (2000) assess the websites of the academic library in Malaysia, the findings reveal that largely the academic libraries in Malaysia have set up a useful and well-designed website, however, a few websites of the academic libraries have basic and very simple features. Overall, as a virtual expression of the website, the quality level of academic libraries falls short of expectations. Mirghafoori, Tooranloo, and Saghafi (2020) diagnosing service quality electronically for academic libraries improvement, and the result indicate a lack of links and information feedback to users on the website is the main difficulty of using websites, further recommend priorities for improving electronic service quality in academic libraries, using the proposed model to removes the glooms in the techniques.

III. USER LOYALTY

Apart from an attitudinal approach, the aspiration of any service organization such as a library is the user's loyalty, and the behavioral aspect of loyalty represents a sense of attachment to the libraries and repeat patronage of services over time (Chen & Shen, 2019; Xu & Du, 2018). This study is viewed as a long-term partnership with library users in accessing web-based library service, which facilitates future usage and positive recommendation to other library users during COVID-19.

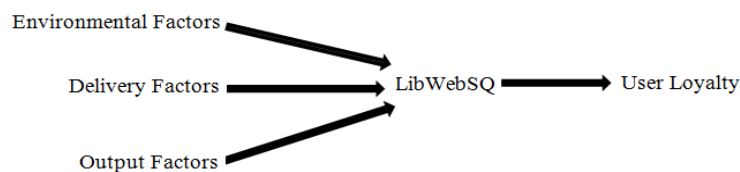## IV. RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

Fig. 1. Research model.

Service quality is considered as one of the key determinants of user loyalty (Makanyeza & Chikazhe, 2017), Previous studies have assessed the relationship between service quality and users' loyalty in other organizations (Diallo, Diop-Sall, Djelassi, & Godefroit-Winkel, 2018; Iqbal, 2020) and libraries (Bakti & Sumaedi, 2013; Xu & Du, 2018). And the result indicates a significant relationship between the variables. Other research indicates no significant effect of service quality on user loyalty (Chandra, Hafni, Chandra, Purwati, & Chandra, 2019). Similarly, studies indicate a significant influence of perceived service quality and user satisfaction on user loyalty (Haruna, Kiran, & Tahira, 2017; Pham, Williamson, & Berry, 2018; Selga-Cristobal, 2018; Sumaedi & Bakti, 2011). This implies that loyal and satisfied users are more likely to recommend and disseminate a positive comment to others for the use of library services. This postulated the hypothesis that:

I.   There is a significant relationship between library web-based service quality and user loyalty to the libraries.

V. RESEARCH METHODOLOGY

A. *Research Design*

The survey method was employed to collect the data for this study. This will allow the investigator to gather information about the target population. This study did not aim to develop a new instrument to measure the variables but rather adopted the LibWebSQ instrument, which was developed by Kiran and Diljit, (2012), to assess the library web-based service quality using thirty-one (31) items, which consists of environmental, 11 items, delivery, 11 items, and 9 items from outcome service quality, and user loyalty with three (3) items scale developed by Martensen and Grønholdt (2003) and Ananthanarayanan Parasuraman, Zeithaml, and Malhotra (2005), respectively. The instrument was chosen base on the reliability and validity assessment. The questionnaire instruments consist of structured open and closed-ended questions built on a seven-point Likert scale (1 = strongly disagree, to 7 = strongly agree) to investigate the relationship between library web-based service quality and user loyalty in selected federal university libraries in Nigeria. However, based on Krejcie and Morgan (1970), a sample of 382 was suggested from the total population of 76,234. However, after cleaning the data, 313 samples were available for analysis using AMOS statistical tool, A random sampling technique was employed.

VI. ANALYSIS AND RESULTS

Table 1 present the demographic profiles of the respondent, the result indicates that majority of the respondents were male 77.0%, whereby 23.0% are females. This indicates that male respondents have greater participation than female counterparts in the study. Similarly, the age of the respondent revealed that respondents aged 16-20 years were the majority in the study that account for 53.0%, followed by respondents aged between 21-25 that account for 23.0% respectively, and the least were those in the category of 26-30 that accounted for 10.5% indicating that majority of the respondents are still young. Similarly, the result of the status of the respondent indicates that 50.8% are undergraduate, and 11.8% postgraduate, whereby, 22.4% are academic, and 15.0% non-academic staff, respectively.

Table 1. Survey participant profile.

Variables	Level	Frequency	Percentage
Gender	Male	241	77.0%
	Female	72	23.0%
Age	16-20	166	53.0%
	21-25	72	23.1%
	26-30	33	10.5%
	31 and above	42	13.4%
Status	Undergraduate	159	50.8%
	Postgraduate	37	11.8%
	Academic	70	22.4%
	Non-academic	47	15.0%

Variables	Level	Frequency	Percentage
	Total	313	100%

Table 2. loading factors and reliability and validity of the construct.

	Web-based library service quality			User Loyalty	Cronbach Alpha	CR	AVE
	Environmental Factors	Delivery Factors	Outcome Factors				
A1	.793				.836	0.874	0.510
A2	.969						
A3	.772						
A4	.545						
A5	.448						
A6		.657			.848		
A7		.783					
A8		.774					
A9		.801					
A10		.804					
A11		.639					
B1			.945		.717	0.938	0.607
B2			.940				
B4			.482				
B3				.819	.945		
B5				.921			
B6				.887			
B7				.859			
B8				.853			
B9				.810			
B10				.773			
B11				.845			
C1				.806	.908	0.908	0.529
C2				.861			
C3				.812			
C4				.783			
C5				.809			
C6				.859			

	Web-based library service quality					User Loyalty	Cronbach Alpha	CR	AVE
	Environmental Factors		Delivery Factors		Outcome Factors				
C7					.793		.873		
C8					.959				
C9					.899				
L1						.901	.872	0.875	0.700
L2						.874			
L3						.906			

A. *Psychometric Properties of the Measures*

This analysis determines the reliability and validity of the variables that would be utilized throughout the study. The reliability analyses showed that all measures had satisfactory good alpha coefficients ranging from .717 to .945 (Table 2). equally, the construct validity of the measures was examined using exploratory factor analysis. Hence, items with satisfactory loadings were retained and used in further analysis.

B. *Measurement Model*

The proposed model was tested based on the CFA outcomes for each dimension. The library web-based service quality consists of the environmental quality, outcome, and delivery quality was measured as well as user loyalty, respectively. The final model has loaded satisfactorily with CMINDF = 1.874, GFI = .878, CFI = .952, TLI = .946, RMSEA = .049, P = .000. The value of GFI is lower than .90 (Hair Jr, Black, Babin, Anderson, & Tatham, 2006). Due to the high correlation among the variables, the measurement model seems to be complicated, thus the low value of GFI is acceptable.

C. *Convergent and Discriminant Validity*

Convergent validity was assessed at the construct level using average variance extracted to examine the correlations of the three dimensions. On the other hand, discriminant validity was computed using Fornell and Larcker (1981) in which AVE estimates for each construct are compared with squared correlations of any construct. The value of AVE should be greater than the value of squared correlations value. The results for convergent and discriminant validity as well as other psychometric properties have given satisfactory reason to move further to the structural model. In table 2 AVE values were between 0.510 – 0.700, and exceed the recommended value of 0.5, this indicates that the variables account for more than half of the variance of its indicators. Therefore, the convergent and discriminant validity were fulfilled.

Table 3. Discriminant Validity.

	Environmental Factor	Delivery Factor	Outcome Factor	User Loyalty
Environmental factor	**0.641**			
Delivery factor	0.122	**0.789**		
Outcome factor	0.148	0.707	**0.801**	
User loyalty	0.091	0.779	0.728	**0.837**

VII. STRUCTURAL MODEL ASSESSMENT

In the proposed structural model, there are four structural paths among web-based and user loyalty. The constructs were tested in the model using SEM AMOS version 18. The model was evaluated based on error variance, modification indices, and residual covariance. Because of the low factor loading, one item each from environment and delivery (A5, = .448, and B4, .482) were not considered for further analysis. However, the model fit the data with CMINDF = 2.492, GFI = .859, CFI = .971, TLI = .908, RMSEA = .064. TLI and GFI are within the acceptable limit due to the fact CMINDF indicates a good model fit as well as RMSEA smaller than .08 (Kline, 2005).
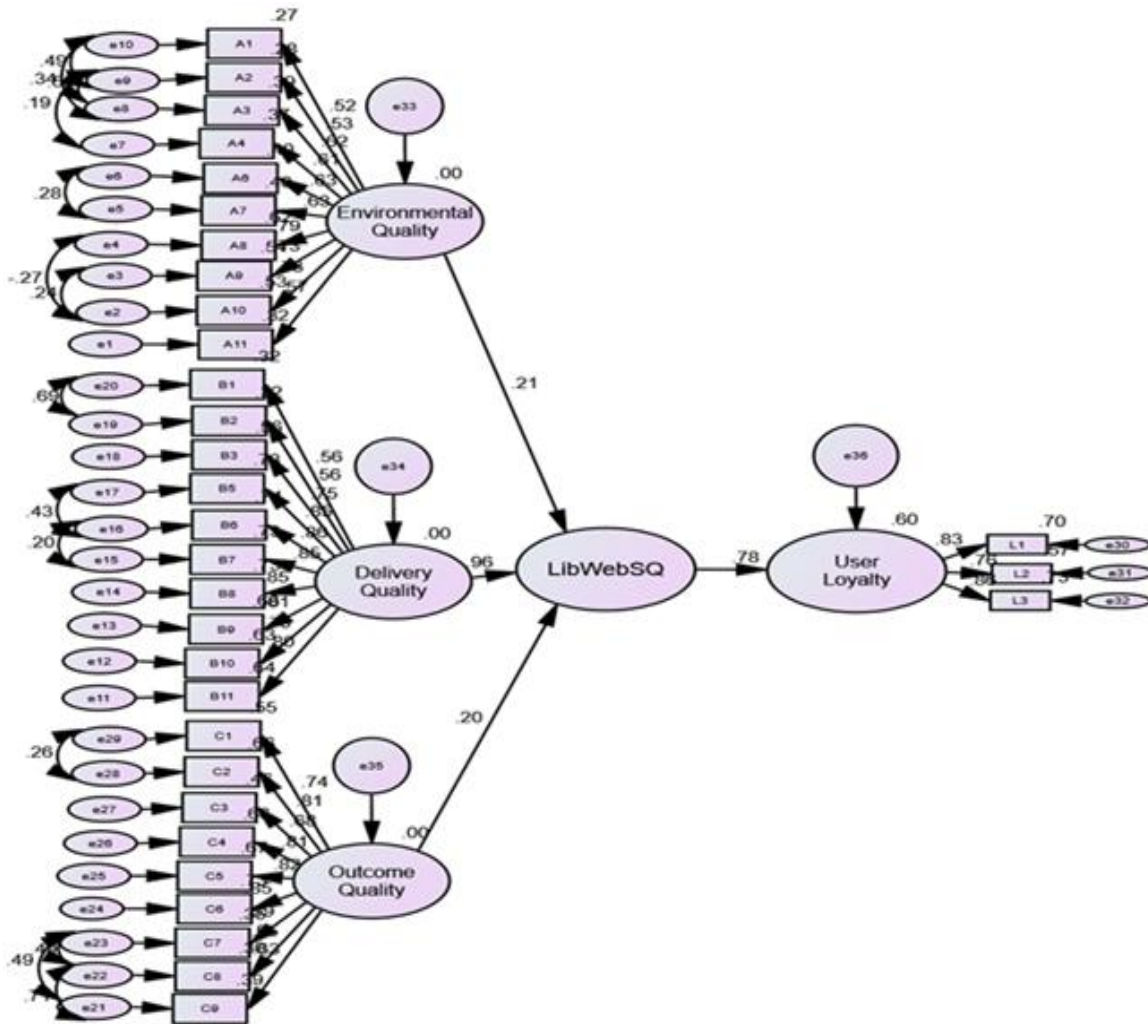

Fig. 2. Research model.

Table 4. Standardized Estimates of the Proposed Structural Model.

	Estimate	S.E.	C.R.	P	SEs
LibWebSQ <-- Environmental Factor	1.000				.214
LibWebSQ <-- Delivery factor	4.146	.863	4.805	***	.957
LibWebSQ <-- Outcome factor	1.000				.197
User Loyalty <-- LibWebSQ	.208	.041	5.017	***	.776

The above Table 4 provides standard estimates, and it was recommended that standardized regression weight should be used to compare the relative effect of each exogenous latent variable on the endogenous variable (Hair, Anderson, Babin, & Black, 2010). The standardized estimate of library web-based service quality to user loyalty was significant (β = .208, CR = 5.017, p = .000). Besides the R2 for user loyalty to the library was 60 percent, indicating that the model offers a strong explanation of the variance.

VIII. DISCUSSIONS

User loyalty is an important factor in the success of any organization including libraries. It was proposed that library web-based service quality influence user loyalty. Therefore, the finding of this study supports the hypothesis that there is a significant relationship between the library's web-based service quality and user loyalty to the library, this is consistent with other previous studies (Bakti & Sumaedi, 2013; Xu & Du, 2018). This implies that ensuring service quality in the library will attract user loyalty which will lead to a positive recommendation to other users. However, from the appraisal of the LibWebSQ scale, it was found that the instrument is reliable as a means of library web-based assessment in Nigerian universities. Obviously, in a competitive environment, library web-based service quality plays a significant role in ensuring the success of service delivery to maintain user loyalty. Hence, one should not forget that a user may be satisfied but may not be loyal to the library. This implies that retaining library users during the covid-19 pandemic situation is more valuable than continually attracting new ones. Therefore, the management should make everything possible to improve user loyalty to the library. Besides, the assessment of library web-based service quality would help management to know their position in the market and come up with strategies to ensure competitiveness during the covid-19 pandemic situation.

IX. IMPLICATIONS OF THE STUDY

The findings of this study, suggest implications to encourage practitioners and policymakers to use the validated measurement scale (LibWebSQ) to improve on the service quality delivery. Understanding factors that influence user loyalty to the library is essential, this may assist the management in the procurement of relevant data-based resources for quality service delivery to maintain user loyalty. Therefore, the management needs to take a drastic step in the use of the multi-dimensional measurement scale of LibWebSQ for rebranding and repackaging library web-based for effective and efficient service quality delivery in Nigerian academic libraries to maintain user loyalty.

X. RECOMMENDATION

The COVID-19 pandemic virus keeps changing in form and manifestation. But the prevention has not changed. Fever and cough, which used to be classical manifestations are now, missing in complaints of many presenting patients. These unusual symptoms will make clinical diagnosis more difficult. So almost any symptom you report to the hospital may require you to take a COVID-19 test. It is recommended that the academic libraries in Nigeria should be enriched to support learning and teaching through excellent service quality delivery to maintain user loyalty. Other recommendations made for this study were strongly oriented to the quantitative study. Therefore, further research should be extended to other types of libraries within the country to future proof the validated instrument. Also, other researchers should employ other variables as mediators to influence user loyalty to the libraries.

XI. CONCLUSIONS

The libraries are tussling with various measurement scales to accommodate library web-based service quality. This study empirically validates the LibWebSQ instrument and the influences on user loyalty during the COVID-19 pandemic in Nigerian academic libraries. Hence, the assessment was done to increase the validity of the measurement scale. The results of the multi-dimensional scale of LibWebSQ established a valid and reliable instrument for assessing web-based service quality, as well as evidence to influence user loyalty during a COVID-19 pandemic situation in the context of the Nigerian universities. As the study focus on library web-based service quality and user loyalty, hence, the patronizing user is very important in the service productiveness. Therefore, the management needs to assess web-based regularly to ensure optimum utilization of library web-based service quality delivery to maintain loyalty. This study provides significant insight to the policymakers on service quality delivery to maintain user loyalty to the libraries during COVID-19 in academic libraries of Nigerian universities.

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