USABILITY EVALUATION OF ELECTRONIC INFORMATION RESOURCES IN ACADEMIC LIBRARIES IN NIGERIA

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Abstract

The study investigated the usability of electronic information resources in academic libraries in Nigeria through an innovative triangulation approach with two usability attributesof perceived ease of use (effectiveness) and perceived usefulness (efficiency). The evaluated method used in this study was the International Organisation for Standardization - ISO 9241-11. To achieve this, a series of usability tests were conducted for 60 randomly selected postgraduate students from six federal universities in Nigeria. The instruments for data collection were questionnaire and focus group guid. The data collected were analysed using SPSS version 25, frequency counts, percentages, mean, and standard deviation. Qualitative data were transcribed, coded and represented in tabular forms. The study discovered among others that electronic resources in the academic libraries studied were not usable for having a negative influence (standardised path coefficient β = -.028) on users satisfaction. It is therefore concluded that, for the postgraduate students to effectively utilise the Internet protocol (IP)-based electronic resources, the libraries must, among others, extend the opening hours for e-library, provide strong Internet connection, subscribe to specialised databases; improve security measures; and display the icons of electronic resources for easy access. Based on the findings of the study, it is recommended that a usability test be conducted for every electronic database prior to subscription and regular hands-on training for library staff and users.

Keywords: Usability Evaluation, Library Databases, Satisfaction, Postgraduate Users, Electronic Resources

Introduction

The Internet and its twin World Wide Web, along with advanced computation technologies catalys**e** the efficient and effective ways in which information resources in academic libraries are acquired, processed, disseminated and utilised. Obviously, this has changed the nature and form of information service delivery in university libraries from physical to hybrid. Today, electronic resources are gaining more popularity in academia because of the emergence of Web 2.0, 3.0 as well as the 4th and 5th Industrial Revolutions couple with their attendant positive impact on globally instantaneous delivery of real-time information services. Consequently, academic libraries now use numerous electronic information resources to complement the available print materials for effective teaching, learning and research.

Presently, users expect university library to provide relevant, adequate and current information resources to satisfy their quest for knowledge. Thus, users' satisfaction is a fundamental factor that requires continuous evaluation in order to determine the efficiency and effectiveness of the library in meeting the users' needs in the parent institution. Usability is about how easy it is for library users to access, navigate, download, save or print from electronic resources websites or portals. At times, the library needs to satisfy users' needs by providing user-friendly databases or portals through which all electronic resources of the library will be stored for teaching, research and learning activities.

In recent years, usability evaluation of electronic resources has become an indispensable exercise in university libraries; this is to ensure that all fee-based electronic resources available in the libraries are constantly active, accessible and useful. It was observed during the feasibility studies that university libraries invested a lot on the provision of electronic resources but the level of utilisation was low compared to the investment made on the resources. Therefore, usability of library electronic resources is an important factor towards effective utilisation of electronic resources. That is why Adegoke, Akor and Abubakar (2020) opined that usability is a vital tool for measuring the strengths and weaknesses of library services performance. In other words, usability connotes 'to what extent a library electronic website is easy to use, efficient in performing a particular task, and satisfactory to library users' (Joo, Lin and Lu (2011).

Over the years, usability evaluation has been conducted in libraries to diagnose graphical user interface, especially problems associated with library websites or portals, database websites or links, electronic resources inward and outward links; and at times to enhance website interface to reflect users' viewpoints. Sometimes, low utilisation of electronic resources can be emanate from the way the sites of the electronic resources were designed, the resolution of the computers used for access, the upload and download speed of the library Internet and users' computer literacy levels. These important issues and others such as performance of the electronic resources in terms of effectiveness and efficiency are the focus of this study.

Statement of the Research Problem

Without any doubt, university libraries in Nigeria are now confronted with numerous challenges relating to underfunding, high subscription cost of ejournals and ebooks, cost of automation, provision of ICT facilities, access and utilisation of such facilities. Other issues of great concern to the libraries also include availability, usability and quality of electronic resources. Indeed, these pertinent issues have continued to generate a considerable discussion which require special investigation with a view to evaluating the quality, relevance, usefulness, and utilisation of the electronic information resources provided in Nigerian university libraries for effective service delivery to users. In a bid to provide adequate, relevant and usable electronic resources, university libraries need to conduct regular usability tests prior to providing electronic information resources.

Research Objectives

The objectives of the study were to:

1. evaluate the usability of electronic resources in federal university libraries in Nigeria; and
2. determine the influence of usability on users' satisfaction with the electronic resources provided in federal university libraries in Nigeria.

Research Questions

1. How usable are the electronic resources provided in federal university libraries in Nigeria?
2. What is the influence of usability on users' satisfaction with the electronic resources provided in federal university libraries in Nigeria?

Hypothesis

H_0: Usability of electronic resources has no significant influence on library users' satisfaction in federal university libraries in Nigeria.

Significance of the Study

The findings of this study would be of great benefit to university libraries, academic/professional librarians, scholars, researchers, and library users, as well as the bodies responsible for the regulation of standards for library practice in Nigeria. These include the Nigerian Library Association (NLA), Librarians' Registration Council of Nigeria (LRCN), Ministry of Education, and the National Universities Commission (NUC). To these stakeholders, the findings of this study would serve as an indispensable source of information for policy formulation, implementation and effective decision making concerning electronic resources subscription in Nigerian university libraries.

This study is the first usability test conducted to determine how usable the library fee-based was in the sampled federal university libraries in Nigeria. The findings of the study would assist university librarians in making appropriate decision on the selection and subscription to electronic resources relevant to users' needs.

Scope of the Study

The study was limited to the Federal University of Technology Library, Owerri, Usmanu Danfodiyo University Library, Sokoto; Ibrahim Badamasi Babangida University Library, Minna; Obafemi Awolowo University Library, Ile-Ife; University of Maiduguri Library, Maiduguri; and University of Benin Library, Benin City. The respondents for this study included postgraduate

students pursuing Postgraduate Diploma, Master of Philosophy and Doctoral programmes who registered with any of the six sampled university libraries during 2018/2019 academic session. The study determined the usability of electronic resources and its influence in federal university libraries in Nigeria.

Review of Related Literature

It is believed that availability of electronic resources in university library does not necessitate utilisation but ease of useand accessibility. However, users' opinions and relevance of the resources to their areas of study can influence the level of utilisation of such resources. This statement is in line with theopinion of the International Organisation for Standardisation(ISO) 9241-11 as quoted by Hassan (2014) that described usability as the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. Similarly, Speicher who was quoted by Adepoju et al. (2018) sees usability as the "effectiveness, efficiency, and satisfaction that the users achieved in using electronic information resources". Usability can be evaluated through response time, ease of use and ease of navigating the information.

According to Ward et al(2015), "library collections become irrelevant if users cannot easily access them". Accessibility has to do with the extent to which library user can view, read, download or use library electronic resources. Libraries can subscribe to electronic resources but may not know when the link to the resources will become inactive, if not properly monitored and used, as it is possible to see an active link today becoming inactive tomorrow due to system maintenance or upgrade. The five 'Es' in usability goes beyond just "ease of use". The five'Es' which stands for effective, efficient, engaging, error tolerant and easy to learn are the multi-faceted characteristics of usability which have being used to evaluate users' satisfaction with system interfaces (Quesenbery, 2001). The University of West Georgia (2022) described usability as a reference to how easy it's for user to navigate what he or she wants on a website. In validation, Nielsen (2012), Joo et al (2011), and Matera etal(2006) modeled usability with either three, five or seven constructs thus: learnability, effectiveness, efficiency, memorability, error rates and satisfaction. In their opinion, Randolph etal. (2015), as asserted in online dictionary (2019), explained usability as the capability of stoners to carry out their asked exertion efficiently and effectively with a given product. This means that usability is about performing a great task within short time using a particular electronic resource to carry out the task successfully.

In his report, Anyim (2018) considered electronic information resources (EIRs) to be a paraphernalia born-digitally or published materials that were converted (digitised) into electronic format including those with rare or unique content or institution-specific resources analogous as university records and slate literature. They can either be subscribed to or constantly bought; pay per view, bestowed or open sourced and saved for recovery at a later time. In the same vein, Emeghara (2014) opined that electronic information resource is a resource which requires computer access or any electronic product that delivers a collection of data, like text, image etc., which is commercially available for marketing. For electronic resources to be acquired, it has to be by subscription, accession or perpetual model, paying- per- viewing or patron-driven or through free registration with any of eBook database or journal publishers for cooperation or authentication purpose. There are two types of databases, namely; subject/specific databases and multidisciplinary databases made available by the aggregators. Aggregators are differently known

as electronic resources or databases providers. Databases providers have their own ways of managing the electronic resources certified to all libraries that subscribe to their resources.
In summary, the review had shown that the previous authors used neither ServQual instruments nor Expectancy Disconfirmation Theory for measuring Nigerian library service quality and its influence on users' satisfaction. Previously, usability of Nigerian university library electronic resources had been measured with either effectiveness or efficiency without combining the two concepts for better understanding of the situation studied. In view of this, it is quite understandable that the previous studies have left wide gaps in the study of usability and services quality as it affects users' satisfaction with electronic services provision in federal university libraries in Nigeria. This has necessitated the need for combining the two constructs for best practices.

Research Methodology

The study used a mixed research method - qualitative and quantitative research approaches. Qualitative method was used to evaluate interface, user and the environment. On the other hand, direct observation, online survey focus group and transactional logging were used to evaluate perceived ease of use and perceived usability of the library electronic resources using two constructs from the International Standardization Organisation (ISO 9241-11) standards (effectiveness and efficiency). All those who took part in the usability exercise were served with light refereshment as a way of motivating them to complete the task 3 (questionnaire). The focus group was ethically conducted, as the respondents voluntarily consented to the discussion and permitted the researcher to use the responses for research purpose.
The data collected were analysed with SPSS version 25, frequency counts, percentages, mean and standard deviations. The subjects of analysis were 60 postgraduate registered library users randomly selected from the six federal university libraries studied.

Two research assistants from the sampled university libraries were engaged for the collection of data for the study. When participants were verbalising their thoughts during the focus group discussion, the author**s** occasionally used appropriate probes to articulate more thoughts and opinions from the discussion. Some of the techniques used included: (1) asking neutral questions, such as "anything else?", "could you please say more about how satisfied you are with the electronic resources?", "what do you mean by ease of use?"; (2) repeating questions to extract dormant ideas from the partcipants; (3) using meaningful gestures, such as providing an expectant pause, smiling, and short conversational feedback (e.g., "I see", "good""uh-huh", "fantastic"). The discussions were recorded using mobile phones and transcribed for analysis. Questionnaire was used to collect additional data from the respondents.

Data Analysis and Discussion

Research Question 1:

1.1 How usable are the electronic resources provided in Nigerian federal university libraries?

Usability test was included as part of the evaluation process for the library users to practically demonstrate how they used the available electronic resources, express their experiences and observation on the electronic resources provided and made accessible by the university libraries. The purpose of the assessment was to explore how easily the postgraduate users can access the electronic resources and how they have been handling any usability issues encountered when using

these resources**,** and to investigate their level of satisfaction with the electronic resources made available to them. Specific tasks were set to test the demonstrable skills of the users on how they use features of the library electronic resources; users were to use the OPAC and any other database**s** provided in the federal university libraries in Nigeria. In the usability test, to locate library hours for Fridays, locate one current e-book/e-journal articles on (OPAC) and check for the item status. Participants located open educational resources (OERs) to download, save on the desktop and print. In addition, users were asked to login to any aggregated (fee-based/ vendor) databases, sign in with institution's username and password, search for any article of interest, then filter by clicking on relevance/date to rearrange the search result, download, save and print.

The time allotted to all the assigned tasks and the nature of the exercises performed by the participants are shown in Table 1.

Table 1:Time allocation table for test tasks

S/No	Task No.	Allotted Time in Minutes (50)	Assignment
1	Task 1	15	Information Retrieval (OPAC)
	Exercise 1	2 minutes	Launch a browser to **se**arch for library portal/ OPAC and operating hour for Fridays
	Exercise 2	7 minutes	Login with the institutional login detail to find an book/ journal
	Exercise 3	6 minutes	View the status of the identified book, download the bibliographic information and save
2	Task 2	15	Information Retrieval (OERs)
	Exercise 1	2 minutes	Launch a browser
	Exercise 2	5 minutes	Search through OER communities
	Exercise 3	6 minutes	download a current book/journal article of your interest
	Exercise 4	2 minutes	save and make attempt to print
3	Task 3	20	Testing the **e**ffectiveness and **e**fficiency of fee-based database(s)
	Exercise 1	2 minutes	Launch a browser to search for any available database
	Exercise 2	6 minutes	Search for a relevant journal or book article
	Exercise 3	8 minutes	Filter the search results by relevance/date
	Exercise 4	3 minutes	Download the most current & relevant article
	Exercise 5	1 minutes	Save on the desktop and make attempt to print.

Results and Discussion

1.2 Users' performance with the assigned tasks

The performance for individual tasks is summarised in tables 2, 3 and 4. In addition to assessing users' demonstrable skills, the study sought users' perspectives about the task completed using a ThinkAloud method of gathering data. Generally, about 42.8% percent of the participants were able to complete all the assigned tasks**,** while 57.2**%** needed special assistance and additional time to complete each of the tasks assigned to them.

1. Observations from the usability tests

During the process of testing the usability of the electronic resources, one of the research assistants was assigned to observe the expression and complaints of the participants through ThinkAloud process. The researcher observed both kinds of positive and negative comments from the participants. Some participants expressed their happiness for having access to the library resources while others expressed dissatisfaction, particularly when users expected to retrieve local contents from the aggregated databases but got something different.

Exercise 1: Finding the library operation hour for Fridays

To complete the first exercise, participants were asked to launch a browser by double-clicking the browser icon to search for the university library online public access catalogue (OPAC) or library portal. At the beginning of the exercise, about half of the 67**%** of the participants that completed the assigned task could not directly locate the library opening hour for Fridays on the screen within the first two minutes. The affected participants complained of difficulties in figuring out where to begin or identify the right option to select for the library OPAC. In some libraries, the participants who attempted to search were frustrated due to poor Internet connection and inability of the library management software (LMS) to load in good time**.** In two of the university libraries, the OPAC resources were only accessible on the server while end users access were denied based on network and other technical hitches.

1.4 Exercise 2: Finding a book/ journal article from open educational resources (OERs)

To complete the second exercise, participants were asked to locate open educational resources (OERs) on the university websites. Subsequently, they were to search using a specific subject area and click on the community where the information was uploaded. To achieve this, the participants were asked to launch a browser, type the search term for open educational resources on the institutional website or library portal and find any article of their choice, download, save and attempt sending to printer. Based on this task, it was observed that 62% of the participants were unable to complete the assigned tasks.

1.5. Exercise 3: Testing the effectiveness and efficiency of the library fee-based electronic resources

The participants were asked to launch a browser, type the database uniform resource locator (url), type the index word/ search term in the search box and browse the database for relevant articles.

The users were instructed to do an advance search by using relevance and date or apply the inbuilt Boolean logics as designed by the vendors of the database, download the most current and relevant article, save on the desktop and attempt to print the full article. Only 23% of the participants were able to complete the exercises within the stipulated time while 77% of them could not do so. Table 2 below gives details of the completion rate and the time spent on the assigned tasks.

Table 2: Time structure for the usability tasks performed by the postgraduate users of federal university libraries in Nigeria

Time	IBBL			Time	FUTOL			Time	HOL		
	T1	**T2**	**T3**		**T1**	**T2**	**T3**		**T1**	**T2**	**T3**
47	12 c	15ic	20ic	**47**	14c	15ic	18c	**40**	12ic	15c	13ic
48	15c	15ic	18c	**48**	13c	15c	20c	**39**	15c	10ic	14ic
43	10 ic	13ic	20c	**45**	10ic	15ic	20ic	**46**	15c	12ic	19ic
49	14c	15ic	20ic	**49**	14ic	15ic	20ic	**47**	13c	14ic	20c
45	15c	16ic	14ic	**50**	15c	15c	20c	**46**	15c	14c	17ic
49	15ic	14ic	20c	**43**	14c	15ic	14ic	**42**	15c	13c	14ic
43	10ic	15ic	18c	**48**	15c	15c	18ic	**40**	11c	9c	20ic
38	5c	14ic	19ic	**44**	15c	11ic	18ic	**14**	15c	15c	16ic
42	15c	12ic	15ic	**46**	15c	15ic	16ic	**13**	5ic	5c	3ic
48	15ic	14ic	19ic	**45**	15c	15ic	15ic	**15**	5ic	5 c	3ic

Time	JHL			Time	RL			Time	AFLC		
	T1	**T2**	**T3**		**T1**	**T2**	**T3**		**T1**	**T2**	**T3**
49	14ic	15ic	20ic	**50**	15c	15ic	20c	**36**	10c	8c	18ic
50	15c	15ic	20ic	**14**	13c	14c	15c	**47**	15c	14c	18ic
45	15c	10ic	20ic	**39**	10ic	14ic	15ic	**50**	15ic	15c	20ic
49	15c	14ic	20ic	**43**	12c	13ic	18c	**39**	15ic	13c	11c
48	13ic	15ic	20ic	**45**	15c	13ic	17ic	**31**	9c	12c	20ic
46	14ic	14ic	180ic	**41**	12ic	10c	19ic	**50**	15c	15ic	20c
45	12c	15ic	18ic	**46**	13c	15ic	18ic	**38**	15c	14c	9ic

45	15ic	10ic	20ic	**47**	14c	14ic	19ic	**41**	10c	14c	17c
48	15ic	13ic	20ic	**41**	12c	9ic	20ic	**41**	14c	13c	14ic

Summary of the number of task completed, the incomplete and their percentages were reported in table 4

Table 3: Summary of the Table 2

Task 1	6+8+7+4+8+7=**40**	43+6+2+3 **= 20**
Task 2	0+3+7+0+4+9=**23**	10+7+3+10+6+1 **= 37**
Task 3	3+3+1+0+4+3=**14**	7+7+9+10+6+7 **= 46**
Sub-total	**77 (42.8%)**	**103 (57.2%)**

Total number of the Assigned Tasks: 180

IBBL			**FUTOL**			**HOL**			**JHL**			**RL**			**AFLC**		
c=6	C=0	c=3	c=8	c=3	c=3	c=7	c=7	c=1	c=4	c=0	c=0	c=8	c=4	c=4	c=7	c=9	c=3
uc=4	uc=10	uc=7	uc=2	uc=7	uc=7	uc=3	uc=3	uc=9	uc=6	uc=10	uc=10	uc=2	uc=6	uc=6	uc=3	uc=1	uc=7

Table 4: Task Completion Table

Task No. **No. Completed** **No. of Incomplete**

Keys: C= Completed IC= Incomplete Time = Time taken to complete a specific task

T1 = Task 1 T2 = Task2 T3 = Task 3

IBBL = Ibrahim Badamosi Babangida Library, Federal University of Technology, Minna

1. Effectiveness had been measured by the number of tasks not duly completed by the participants minus the total number of the assigned tasks.
2. **Effectiveness (eft)** = 180 – 103 = 77
3. **Eft = 77**

Efficiency was measured by the number of completed tasks (output) divided by the total number of the assigned tasks multiplied by hundred.

Efficiency = Efy

4. **Efy = No. Completed Tasks / No. of Tasks**

Efy = 77/180 = 0.43 X 100%

= 43%

Table 5: Analysis of the Usability Assessment Questionnaire for Postgraduate Users of Federal University Libraries

Usability Evaluation Criteria for fee-based electronic resources	**Questions Related to Usability Factor**	**S.D**	**D**	**A**	**SA**	**FX**	**M**	**S.D**	**Decision**
Effectiveness: Simplicity/ ease of use, ease of access, user friendliness, reliability, learnability & suitability, error tolerance	LEDUQ 1- 9	18(36%)	16(32%)	10(20%)	6(12%)	50	2.08	1.02	Disagree
Efficiency: Comprehensiveness, Usefulness, Comfort, Time saving, Currency, Printable	LEDUQ 1 – 7	14(28%)	19(38%)	8(16%)	9(18%)	50	2.24	1.06	Disagree
Satisfaction:		HD	D	S	HS				
Adequacy, reliability friendliness, usefulness productivity, successful, fulfillment	2,3,4,5	9(18%)	23(46%)	15(30%)	3(6%)	50	2.24	0.82	Dissatisfied
Total		**41(27.3%)**	**58(38.7)**	**33(22%)**	**8(12%)**				

Tables 3 and 4 showed that 57**%** of the participants failed to complete the assigned tasks within the stipulated time due to their inability to locate where the items were, while those who could locate the right page, encountered technical issues such as power fluctuation in the library, slow booting and downloading from the system, poor Internet connection.Those without technical issues experienced errors which they found difficult to handle by themselves as reported in Table 5, where mos of them expressed their dissatisfation with the adequacy, reliability usefulness and friendliness of the databases. Some of the participants who were unable to type the web address correctly were asked to check and retry until they were able to login in. Based on the foregoing facts and the observations gathered from the ThinkAloud protocol and Table 5, it is obvious that the problem of low utilisation of electronic resources in the federal university libraries emanated from the users' inability to search independently due to lack of relevant skills, users' attitudes towards system error**,** and behaviour towards ineffective electronic systems and services. Most of the participants were interested inseeing all icons of the databases displayed on the library desktops, while some preferred to have all the works published or supervised by their lecturers in the subscribed databases. More over, the contents of the subscribed databases particularly ProQuest was not satisfactory to some Engineering, Medical, Arts and Humanities, Management and Education students. Also, participants from specialised universities found the electronic databases not adequate enough due to the peculiar nature of their programmes of study.

Satisfaction was measured by a 4 Likert rating scale with several satisfaction elements as contained in the LUSAQ instrument. To obtain more data from the participants, sixty copies of the questionnaire were administered on the usability tests conducted, out of which only fifty were found useful for analysis.

Research Question 2:

2.1: What is the influence of usability on users' satisfaction with electronic resources provision in federal university libraries in Nigeria?

From the data available in tables 3, 4 and 5 above, it is evident that usability of library electronic resources is one of the major factors for users' dissatisfaction. This is simply because of the fact that every library user was timed when using the library computer desktop or library café and failure to conduct a research or assignment within the stipulated time led to ineffectiveness and inefficiency of the library electronic services. Figure 1 below depict**s** the existing relationship between the usability of electronic resources and library users' satisfaction.

SEMDiagram for Relationship Between Usability and Users' Satisfaction

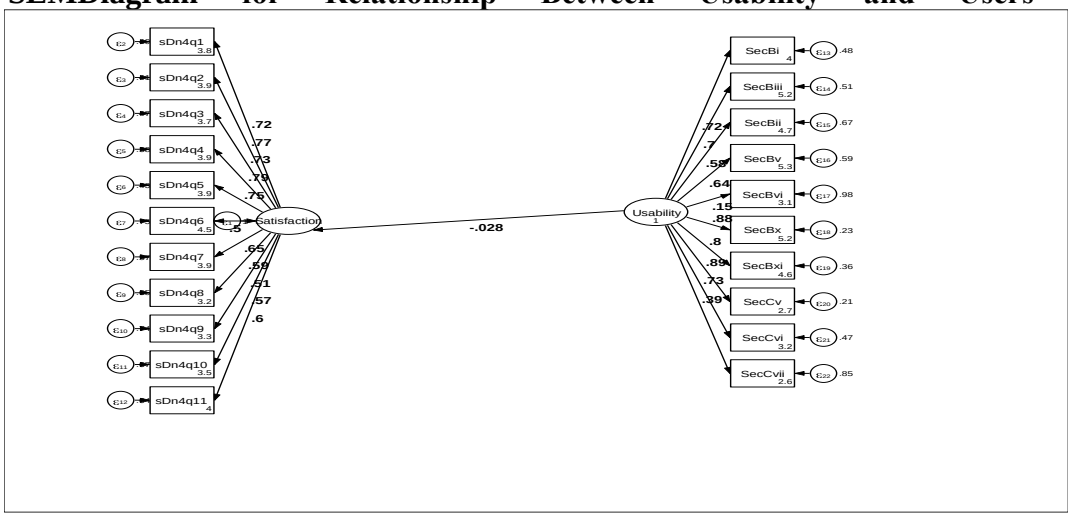

Fig 1: Structural equation model of the relationship between users' satisfaction and usability of the EIR

The results obtained from the test of hypothesis of the relationship between usability and users' satisfaction with electronic resources showed that a standardised path coefficient (β = -.028) would give a negative relationship between usability and users' satisfaction**;** and having a p-value of (p>0.493) showed an insignificant relationship between the usability of library electronic resources and the users' satisfaction. Thus, the null hypothesis three stated in this study is not rejected. This can be interpreted to mean that usability of library electronic resources has influenced user satisfaction negatively for being on the negative disconfirmation side and a very strong indicator of users' dissatisfaction, which calls for university librarians to give necessary attention tofor improvement.

2.2 Qualitative Analysis the focus group discussion

Thematic analysis according to Maguire and Delahut (2017) is the process of identifying patterns or themes within qualitative data. The focus group with users lasted for 60 minutes in every session conducted. The discussion looked at how participants felt about the usability of of library electronic resourcesand its influence on their satisfaction. The relevant data extracted from the focus group discussion were transcribed verbatimand presented in Table 6 below**.**

What are the things that can increase your level of satisfaction with library electronic resources?

Table 6: Thematic analysis of the focus group discussion with postgraduate users

Sub-Theme: Determinants of Users Satisfaction	
I need quiet library environment.	15
I need access to good Internet connection.	49
I want extension of library café opening hours.	23
Let there be adequate systems with good connection.	12
I need specialised databases and good Internet connection.	37
I need remote access to library electronic resources.	40

I will like the library to provide adequate security measures.	46
I want icons of open access resources to be on the desktops.	5
I want the library to permit Laptop use.	51
I want the library to create more awareness.	38
I need conducive environment	19
Let library create more awarenessby using SMS.	45
I need discussion room.	27
Library should improve security measure.	40
Library should provide more computers.	19
Library should extend the operation hours.	39
I need literacy training.	11
Library should increase hours allocation for every user of the elibrary	45
I need remote access to library electronic resources.	42

The focus group discussions responses presentented in Table 6 revealed the users' opinions on the usability of the library electronic resources and servicesas well as their satisfaction. It was found that, most of the participants were moderately satisfied, which suggests that the federal university libraries provided minimal service delivery. Worth noting are the issues raised under the determinants of satisfaction. A number of users requested for the use of text message services for awareness creation and increased library hours to enable them to judiciously utilise the library facilities and services.

Summary of the Findings

In summary, the findings of the study are as follows:

1. The electronic resources available in the selected university libraries failed usability test, hence the resources were not usable.
2. Usability had a negative influence on users' satisfaction with the electronic resources.

Conclusion

Based on the findings of this study, it is concluded that the postgraduate users of the libraries can effectively utilise the Internet protocol (IP)-based electronic resources provided the following measures are put in place: opening hours for the eLibraries are extended; strong Internet connection, subscription to more specialised databases; improve security; display the icons of electronic resources for easy access; give laptop loan to postgraduate users on request; regular sensitisation programmes, and maintain uninterrupted power supply. It is finally concluded that, regular evaluation of electronic resources is necessary for effective and efficient library services and satisfaction of users' needs.

Recommendations

In the light of the foregoing, the following recommendations are proffered for improvement:

1. University libraries should ensure that databases or electronic resources for subscription are subjected to usability evaluation; thereby ensuring saving cost, ease of use and maximum utilisation of the electronic resources.

2. Usability evaluation as well as literacy training for both the library staff and users should be organised on regular basis.

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