



**USABILITY STUDY OF LIBRARIKA LIBRARY MANAGEMENT SOFTWARE IN
LIBRARY SERVICES OF A PRIVATE UNIVERSITY LIBRARY IN NIGERIA**

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ABSTRACT

Librarika Library Management Software (LMS), an integrated management software develop to manage library functions and services was evaluated. The study was conducted to determine the usability of Librarika cataloguing and circulation modules from the perspective of real users and three research objectives guided the study. The population of the study was 12 library staff consisting of eight librarians and four para professionals of the private university library. Usability testing method was adopted for this study and data were collected using observation and questionnaire from the participants. Result showed that cataloguing module was effective at acceptable level of good (66.67 and 75.00%) and circulation module was effective at acceptable level of good for registration templates (75.00 and 66.67 %), excellent for charging template (83.33 %) and best for discharging template (91.67 %). The efficiency of cataloguing and circulation tasks were achieved at different times and participants were satisfied with the overall interaction with Librarika LMS. However, usability issues such as cumbersomeness were also identified with the cataloguing module and circulation (registration templates) modules. Therefore, the study recommends that cataloguing and circulation (registration templates) modules should be improved upon when designing and developing newer version.

Keywords: Cataloguing module, Circulation module, Librarika library management software, Usability

INTRODUCTION

Advancement in the field of information technology has compelled libraries to embrace computer and software technology in their operations worldwide. Access to information and communication technology has transformed the way and manner in which library housekeeping operations are being carried out. Today, libraries across the globe have relied on information and communication technology such as library management software (LMS) to be able to manage and provide services to their users. The presence of this technology becomes increasingly important in order to enhance library operations, meet the expectation of library users and facilitate access to information and knowledge. The potentials of performing library



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housekeeping function and services made university libraries in Nigeria to adopt LMS and subsequently transform from manual to automated operations. Application of LMS in cataloguing and circulation functions have also altered and impacted the working pattern of librarians in university libraries in Nigeria.

Muller (2011) described LMS as a multifunction application that enables libraries to manage, catalogue and circulate materials to their users. LMS exist in discrete programs called modules, each of them integrated with a unified user interface (Uzomba *et al.*, 2015) that address functions such as acquisition, cataloguing, circulation, serial and Online Public Access Catalogue (OPAC) activities of the library. The purpose of LMS is to automate library operations and services, thereby enhancing the efficiency and effectiveness of library routine activities by eliminating strenuous and repetitive tasks.

The use of Librarika integrated library software is of great importance in the management of both physical and virtual resources of a library. Application of Librarika LMS supports acquisition, cataloguing, circulation and Online Public Access Catalogue (OPAC) functions of the library. Librarika also provide reports to monitor library daily activities such as tracking library materials, members, fines and library patrons can view their status, fines incurred, notifications, reserve book and also support patron authentication (Yuvaraj, 2016).

Cataloguing module allows library staff to prepare and store bibliographic record of library materials thereby enabling the items catalogued to be view from OPAC. The circulation module enables library staff to create and manage patron's record, issue or return item borrowed, reserve book(s), renew borrowed book(s) and calculate fine incurred. Therefore, it becomes paramount to develop user friendly cataloguing and circulation modules that allow library staff to effectively and efficiently perform cataloguing and circulation activities. With the increase in the use of LMS in university libraries in Nigeria, librarians and library staff expectation are centred on usefulness and usable intergraded library management software. While usefulness deals with



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the feature necessary to carry out library task, usability describes how easy it is for library staff to accomplish library functions using LMS.

Nielson (2012) defined usability as a quality attribute that assesses how easy users' interfaces are used. Neilson further identified five elements which described usability to include ease of learning, efficiency of use, memorability, errors and satisfaction. Usability relates to the effectiveness, efficiency and satisfaction with which users achieve goals using a software (International Standard for Organisation (ISO) 9241-11, 2018). Therefore, an LMS should support its user to achieve intended goal and enrich the users' experience throughout the interaction process with the software. Alshehri *et al.* (2019) stated that the effective and efficient use of a software system depends on the appropriateness of the designs and how easily users interact with the system to fulfil their expectation and needs. Therefore, the user has become an important part of evaluation and development process that can be used to measured user interface of LMS.

Statement of problem

Usability defines the quality in use of an information system which affects the extent to which a system can be effectively and efficiently used to achieve specific goals with satisfaction. Given the increasing need to improve library effectiveness and efficiency, LMS are use in library housekeeping functions and services, however, many of these software modules are difficult to use. It becomes necessary to evaluate the usability of Librarika in order to identify issues based on their impact on the user interaction with the user interface. Therefore, this study seeks to evaluate the usability of Librarika cataloguing and circulation modules used in library services in a private university library in Nigeria from users' perspective.

Objectives of the study

The objectives of this study are:

1. To determine the effectiveness of Librarika cataloguing and circulation modules in library services



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2. To examine the efficiency of Librarika cataloguing and circulation modules in library services
3. To ascertain the satisfaction derived from using Librarika cataloguing and circulation modules in library services

LITERATURE REVIEW

According to ISO 9241-11 (2018), for a product or system to be usable, users should be able to use it to achieve their goals in an acceptable amount of time and be satisfied with the results. The definition identified effectiveness, efficiency and satisfaction as attributes of usability. Punchoojit (2017) posited that users who cannot achieve their goals effectively, efficiently and in satisfactory manner with a particular LMS are likely going to seek for alternative solution to achieve their goals, that is why Jayaletchumi *et al.*(2014) stated that software usability is a key factor in the success or failure of a software product, because the users directly interact with the system interface and utilizes services offered by the system. Therefore, identifying issues with LMS seems to be necessary through usability evaluation, as such several studies on usability evaluation of interactive system have been carried out in order to improve the usability of software and to enhanced effectiveness and efficiency of employee. Suduc *et al.* (2010) noted that the reasons behind usability evaluation of any system are to have understanding of the user needs and improvement in order to provide a better user experience with a software.

Khajouei and Farahani (2020) evaluated the usability of an information system in hospital. The study identified problems related to satisfaction, learnability, error prevention, effectiveness and efficiency with the use of user and expert based method. Forty four usability issues were identified with information system in hospital and suggested a review of the system. Another study on evaluation of the usability of electronic record system in African by Kavuma (2019) revealed that the ease of learning was 71 %, effectiveness was 67 %, efficiency was 64 % and user satisfaction was 66 %. The study concluded that the ease of learning was good therefore affected the overall usability of electronic record system. Similarly, Khatun and Ahmed (2018) conducted a usability testing of Koha OPAC. The result of the task based empirical study from



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users' point of view indicated significant difference in the degree of performance and satisfaction between experienced and novice users, the study concluded that the software was difficult for new users therefore, suggested that designers and developers should improve on newer version.

METHODOLOGY

Usability testing method was adopted for this study. The population of the study was twelve library staff consisting of eight librarians and four para professional drawn from selected private university library in Abuja, Nigeria. All librarians and paraprofessionals were selected for the study because they are familiar with the use of Librarika cataloguing and circulation modules. Data were collected through observation and questionnaire. Usability testing was employed to perform cataloguing and circulation tasks using a system. The tasks included description of books, registration of users, charging and discharging of library materials to users. Participants performed the predetermined tasks one at a time, while the researcher watched how participants interacted with LMS in their working environment and noted their successes and the time it took them to complete each task on the participant's observation form.

Six tasks consisting of two cataloguing and four circulation tasks were performed by the participants and performance metrics based on task success, time taken on task (task completion time) and rating scale based on ISO 9241-11(1998) and Mifsud, 2015 were used as indicators to measure usability of cataloguing and circulation modules of Librarika LMS. Classification of system usability scale (SUS) modified by Farrahi *et al* (2019) was adapted as benchmark for acceptability region of LMS. Participants were given maximum of 300 seconds for tasks 1 and 2, 180 seconds for tasks 3 and 4, 40 seconds for task 5 and 6. Each participant performed user testing of Librarika LMS at a time, after which questionnaire was administered to the participants to fill.

Tasks performed by participants are: 2 different books were catalogued, 2 students were registered, a book was charge to a user and the user was discharge of the book.



RESULT AND DISCUSSION

Results obtained in the study are presented in graphs and Tables below.

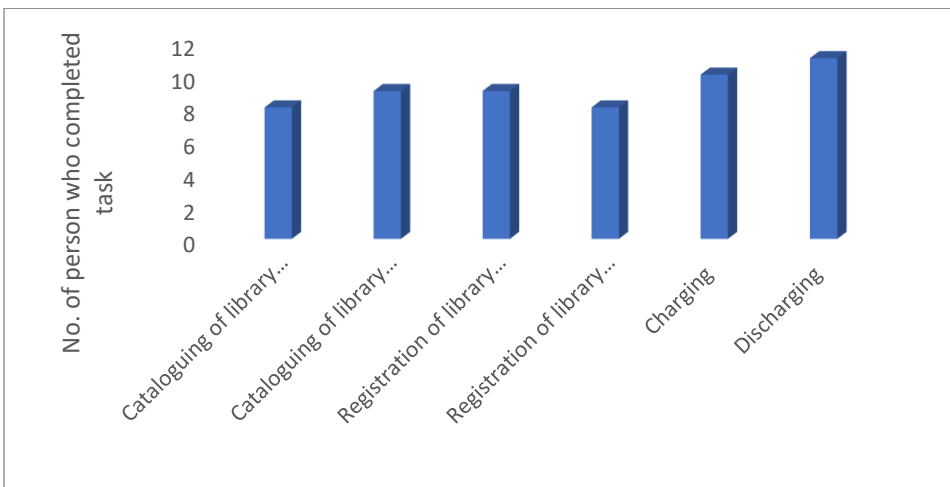


Figure 1: Participants task success for effectiveness of cataloguing and circulation modules of Librarika LMS

Figure 1 showed that 8 participants successfully completed cataloguing task 1 and 9 participants completed cataloguing task 2 within the time limit. Closed observation revealed that participants who could not finish task 1 and 2 were confused and navigating from one cell to another was difficult. This could have contributed to the errors committed when entering bibliographic information of books by participants (Wirasmiaka and Uska, 2018). Difficult task perform indicates usability issues with the module. The figure also revealed that 9 participants completed registration task 3 while 8 participants completed task 4. The inability of participants to complete tasks 3 and 4 could be attributed to slow typing speed and poor internet service. Furthermore, the figure showed that 10 participants completed task 5 and task 6 was successfully completed by 11 participants within the time limit given to them. Soewardi and Perdana (2019) reported similar result on effectiveness of English board game developed for educational learning of English.

The result of percent effectiveness of Librarika cataloguing and circulation module is presented in figure 2.

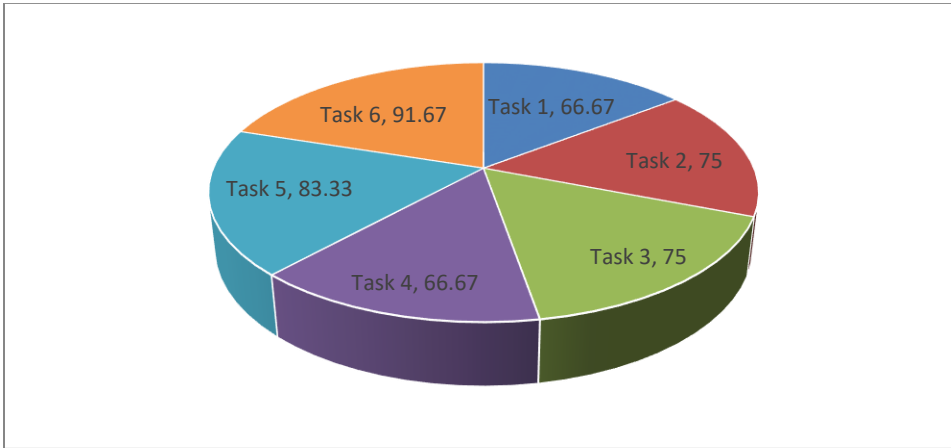


Figure 2:Percent effectiveness of Librarika cataloguing and circulation modules.

The percent effectiveness of Librarika cataloguing and circulation modules in Figure 2 showed the level of tasks completion by participants. Figure 2 revealed that cataloguing and classification tasks 1 and 2 were achieved with 66.67 and 75.00% indicating that not all the participants completed the predefined cataloguing tasks. Tasks 1 and 2 had 33.33 and 25.00 % errors which are less than the rate of completion signifying high level of effectiveness of cataloguing module. Errors committed could be attributed to confusion and navigation issues. Also, the number of templates and the bibliographic information required to be filled may have contributed to the inability of some participants to successfully complete tasks 1 and 2. From the classification of system usability scale (SUS) modified by Farrahi *et al* (2019) and adapted for acceptability region of LMS effectiveness, 25- 37.5 is considered poor, 37.6- 52.9 is considered fair, 53-67.4 % is ok, 67.5-74.5 % is good, 75-85 is excellent and 85.5- 100 % is considered best. Therefore it can be concluded that Librarika cataloguing module is considered to be good and hence effective for use. Similar observation was reported by Soewardi and Perdana (2019) that English board game developed for educational learning of English was effective.

Figure 2 also showed the percent effectiveness of registration of library users (tasks 3 and 4). The figure revealed that tasks 3 and 4 were achieved with 75.00 and 66.67 %. This means that not all the participants successfully completed the process of users' registration. This is could be due



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to excess data elements required to be filled during registration of students. Furthermore, Figure 2 revealed that charging and discharging tasks (tasks 5 and 6) were achieved with 83.33 % and 91.67 % completion signifying the simplicity of the template. This could be attributed to the ease of use of charging and discharging templates. The single nature of charging and discharging templates with only needed information also contributed to the ease of use. Based on the classification of system usability scale (SUS) modified by Farrahi *et al* (2019) and adapted for acceptability region of LMS effectiveness, 25- 37.5 is considered poor, 37.6- 52.9 is considered fair, 53-67.4 % is ok, 67.5-74.5 % is good, 75-85 is excellent and 85.5- 100 % is considered best. It can be concluded that Librarika registration templates are considered to be good, charging is template is excellent and discharging template is considered to be best and hence, circulation module is effective for use. Thuseenthan *et al* (2015) reported similar findings that learning management systems developed for educational learning programmes was effective

Table 1: Participants' time on tasks for efficiency of tasks performances using cataloguing and circulation modules of Librarika LMS

Participant	T1 Cataloguing lib. Book	T2 Cataloguing lib. Book	T3 Reg, of Lib users	T4 Reg, of Lib users	T5 Charging lib material	T6 Discharging lib material
Participant A	303	311	172	169	35	27
Participant B	257	252	170	178	28	19
Participant C	291	279	199	189	36	21
Participant D	369	358	179	165	49	21
Participant E	313	315	183	176	39	23
Participant F	244	250	179	164	25	20
Participant G	288	282	174	172	29	17
Participant H	324	316	200	191	45	24
Participant I	276	268	163	173	30	19
Participant J	385	379	192	177	39	26
Participant K	313	327	179	178	39	22
Participant L	368	352	210	197	41	29



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Table 1 revealed that participants 'F' had the lowest time used to complete tasks 1 and 2. Participant F spent 244 and 250 seconds to describe library materials, followed by participant 'B' with 257 and 252 seconds to achieve tasks 1 and 2. The Table also showed that participant 'J' spent the highest time to perform tasks 1 and 2. The participant catalogued the same books at 385 and 379 seconds. A careful observation of Table 2 showed that participants catalogued library books at different times. This could be attributed to participants typing skills and ability to navigate through the steps and templates when imputing bibliographic information of an item(s). Many steps and templates could have also contributed in the inability of some participants to complete cataloguing tasks quickly. These can affect the productivity of librarians as they catalogued and classify library materials.

Table 1 also revealed the time spent to register library users. The result showed that participant 'I' spent the lowest time of 163 seconds to complete task 3 and participant 'L' spent the highest time of 210 seconds to perform the same task. Table 1 further revealed that participant 'F' spent the lowest time of 164 seconds and participant 'L' spent the highest time of 197 seconds to perform task 4. The difference in the time used to register library users could be attributed to the number of data elements require to be filled, number of templates, the typing speed of the participants and internet service. This implies that librarians that are slow in imputing users' data would spend more time to finish registering library users, thereby affecting the productivity of circulation librarians and library users are likely going to waste much time waiting to be registered.

Furthermore, Table 1 showed the time spent to charge and discharge library materials. The result revealed that participant 'D' spent the highest time of 49 seconds to complete charging an item (task 5) and participant 'F' spent the lowest time of 25 seconds to perform task . The result also showed that participant 'L' achieved task 6 with the highest time of 29 seconds and participant 'G' achieved the same task with the lowest time of 17 seconds. A careful observation of Table 1 showed that not all participants performed tasks 5 within the time limit but all participants achieved task 6 within the limit of time. This implies that charging and discharging templates



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have minimal data elements required to be filled and simple to use, indicating that library users can be served without taking much time. This observation is similar to the reports obtained by Soewardi and Perdana (2019) and Thuseenthanet *al* (2015) on efficiency of English board game developed for educational learning of English and educational learning programmes systems.

Table 2: Satisfaction derived from using Librarika cataloguing and circulation modules in library services

S/N	Statements	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed	Total (FX)	N	\bar{X}	Decision
1	It is easy to use Librarika LMS to describe/catalogue and circulate library materials	2	6	5	1	37	12	3.08	A
2	I learnt to use Librarika LMS quickly and easily	0	4	8	0	28	12	2.33	D
3	I found the system cumbersome to use	0	9	3	0	33	12	2.75	A
4	Cataloguing library materials are performed in a straightforward manner	0	7	5	0	31	12	2.58	A
5	The cataloguing module of the LMS has extraneous elements	3	7	2	0	37	12	3.08	A
6	I am comfortable using Librarika LMS to describe/catalogue and circulate library materials	2	6	2	2	32	12	2.66	A
7	Circulation activities are perform in a straightforward manner	2	6	4	0	34	12	2.83	A
8	The circulation module of the LMS has extraneous elements	0	7	5	0	31	12	2.58	A
9	I found the system complex to use	0	5	7	0	28	12	2.33	D
10	My overall impression about the interaction with Librarika user interface is satisfying	0	8	4	0	32	12	2.66	A

The results in Table 2 revealed that the participants agreed with majority of statements (items 1, 3- 7, and 10) with mean scores of ≥ 2.50 . The participants agreed that it was easy to use Librarika cataloguing and circulation modules to describe, register users, charge and discharge library



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materials to users with mean scores of 3.08. Participants also agreed that cataloguing and circulation activities were performed in a straightforward manner indicating that participants were comfortable using Librarika LMS (see Table 2). Furthermore, participants also agreed that Librarika was cumbersome to use with mean score of 2.75 and cataloguing and circulation modules have extraneous elements with a mean score of 3.08 and 2.58 respectively. This could have contributed to learning difficulty of the software by the participants who disagreed with the statement “I learnt to use Librarika LMS quickly and easily” with a mean score of 2.33. Table 2 also indicated that Librarika LMS was not complex, so participants were satisfied with the interaction with Librarika user interface with a low mean value of 2.66. This is in line with the report of E- learning courses system by Eltahir et al (2019). The study observed that majority of the students and staff opined that they were satisfied with the E-learning moodle system. However, few usability issues were identified with Librarika cataloguing module.

CONCLUSION

The evaluation of Librarika cataloguing and circulation modules revealed that cataloguing module was effective at acceptable level of good; however, participants committed errors which affected the high level of effectiveness. The efficiency of cataloguing was achieved at different times which also affected the high level of productivity. Usability issues were identified with the cataloguing module as participants identified cataloguing module as cumbersome to use with extraneous elements to fill. Circulation module was also found to be effective at acceptable level of good (registration templates), excellent (charging template) and best (discharging template). Efficiency of circulation was achieved at different times and participants were satisfied with the overall interaction with Librarika LMS. The study concluded that Librarika cataloguing and circulation (registration templates) modules have usability issues such as cumbersomeness, learning difficulties and navigation issues therefore, recommends that the modules should be improved upon when designing and developing newer version.



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