APPLICATION OF ICT IN KNOWLEDGE SHARING AMONG UNDERGRADUATE STUDENTS IN THREE UNIVERSITY-BASED LIBRARY SCHOOLS IN NORTHERN NIGERIA

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Abstract

Knowledge management process encompasses the generation, acquisition, organization, preservation of knowledge and application of information and communication technology in knowledge management. Knowledge sharing is the key element in knowledge management process. The study investigated the use of ICT in knowledge sharing among undergraduate students in three university-based library schools in Northern Nigeria with respect to partners and methods involved, impact of ICT and factors influencing knowledge sharing. Survey researchdesign was used with population of 2,080 undergraduate students in Ahmadu Bello University, Zaria, Bayero University Kano and Federal University of Technology Minna respectively. Stratified proportionate sampling technique was used to select 337 undergraduate students by levels of programme in the three library schools in Northern Nigeria. Close-end questionnaire was used in data collection. Researchers administered 337 copies of questionnaire through the respective heads of library schools. Response rate showed that 321 copies were filled, retuned and found usable. Frequency counts and percentages were used in data analysis. Results showed that course mates were the knowledge sharing partners; social network was the major method used and ICT has helped in the acquisition, dissemination and transfer of information and knowledge. Attitude was considered as the major influencing factor to knowledge sharing among undergraduate students in the three university library schools. The study recommended amongst that: Knowledge sharing should not be limited to course mates alone; there should be high level of acceptance and attitudinal change towards knowledge sharing practice. In-depth relationship be encouraged to foster collaborative learning among undergraduate students in library schools in the region.

Keywords: Knowledge management; Knowledge sharing; Undergraduate students; Library schools; Nigeria

1. Introduction

Many at times people perceive the concepts of data, information and knowledge as being the same not knowing that theyare of different entities counting or listening numerical values 1,2,3,4,5 which does not give meaning and hence called data. Data is any unprocessed or raw fact, while information is the processed data that gives meaning. Knowledge is the further

processed form of information that gives adequate information. Aina (2004) supported this augment by making illustration as below:

data $\longrightarrow$ information $\longrightarrow$ knowledge $\longrightarrow$ wisdom

Knowledge according to Alegbeleye (2010, p.4) "is comprehended information that is capable of supporting action, while action is the application of knowledge". However, knowledge can be categorized into two main areas i.e. tacit knowledge and explicit knowledge. Tacit knowledge is the knowledge people is believe, experience and thus exist in mind; they are personal knowledge used by members or workers in organizations. Explicit knowledge is expressed through the use of symbols and are codified in documents and other records.

Tacit or Explicit knowledge, can be managed through and hence knowledge management. It is concerned with organized methods and approach to the gathering, generation, storing, preserving of knowledge. For effective management of knowledge all these processes must be taken into consideration. In general, knowledge management (KM) encompasses knowledge acquisition and generation, organization, sharing and application of information technology. In knowledge management process, knowledge sharing although it is similar to knowledge dissemination, knowledge sharing is a process of making the gained/accumulated experiences and knowledge available to other members of the organization which further require academic libraries to improve on the access to resources and resource sharing strategies in different formats of information resources through the use of ICT (Alegbeleye, 2010; Usoro&Effiong, 2015).

ICT is being used in all aspects ofhuman endevour, be it education, agriculture, banking, medicine, industries, aviation and libraries and information centres. For knowledge to be effective and adequately shared among people, the use of ICT is paramount. One of the functions of ICT in this regard is the use of e-mail, social networking, etc., to exchange ideas among mankind.The use of ICT in knowledge sharing among undergraduate students in the departments ofLibraryand Information Science in Nigeria has not be well articulated and identify and this situation accounts for various challenges in sharing knowledge in the course of pursuing their academic and research activities.

2. Statement of the problem

The purpose of establishing Universities are for teaching, learning, research and community services. Effective teaching, learning and research activities in universities depends on adequate knowledge. Knowledge can be adequately acquired from diverse sources thus, the need for knowledge sharing become paramount. ICT has played vital role by overcoming barriers to knowledge exchange among undergraduate students in various library schools in Northern Nigeria. With the IC,T the barrier to knowledge exchange among undergraduate students from different library and information science schools or geographical places have been overcome.

However, it is important to observe that despite the various benefits that could be derived from knowledge sharing, there are quite a number of LIS undergraduate students that have not been adequately participating in knowledge sharing activities. Therefore, this study seek to find out the extent to which ICT is applied in knowledge sharing participation among the undergraduatestudents of three library schools in universities inNorthern Nigerian.

3. Research questions

In order to ascertain the use of ICT in knowledge sharing among undergraduate students in library schools in Nigeria, the following research questions were used to guide the study:
1. What knowledge is share?
2. What methods are used in knowledge sharing?
3. What are the impacts of ICT on knowledge sharing?
4. What are the inhibiting factors to knowledge sharing among undergraduates in the departments of Library and Information Science in Nigeria?

4. Review of empirical related studies

Dissemination of indigenous knowledge using raffia artisans in Ikot Ekpene Local Government Area of Akwa-Ibom State, Nigeria was investigated. Data were generated through oral tradition, questionnaire interviews and observations. The study revealed that raffia craft knowledge is stored in peoples' memories and activities and are expressed in the form of stories, songs, dances, beliefs, etc. Knowledge is transmitted orally. Raffia artisans do not freely shared their experience and belief with others. So the knowledge is most conserved within themselves so that other parties do not have access to their methodologies(Ntui& Ottong,2008). The empirical literature is related to the student because knowledge sharing involved homogenous group. A little deviation is the fact that ICT is not use in knowledge sharing among raffia artisan. The author is of the view that this homogenous group share knowledge according to their culture.

On the efficacy of conducting teaching and learning through e-mail to distance learning class in Nigeria investigated through data collectionand using structured questionnaire. It was reported that continuous exposure of students to e-mail teaching learning method has led to persistent increase in the number of assignments written by students in the Department of Adult Education, University of Ibadan. This further led to computer literacy skills (Ojokhata, 2O09).

A study was conducted to determine the patterns of undergraduates' participation in online discussion forum in university of Ilorin. Students of the Faculty of Information and Communication Technology were used as the subject of the study. A purposive sampling technique was used to select 50 students from each department (Library and Information Science, Information Communication Science, Telecommunication Science and Mass Communication. Questionnaire was used for the collection of data. The study revealed that socratic questioning was the major pattern of online participation, while the depth of participation was on daily basis.The benefit of participation in online forum was that it encourages sharing ofknowledge, ideas between participants and highly level of regularity in the online face-to-face interaction. The major problem of participation in the online forum was the incessant power outage(Tella& isah,2010).

A study was conducted to determine the attitudes of academic librarians towards training in the digital library environment using population of 81 librarians in three academic libraries in Enugu State, Nigeria. Copies of questionnaire were distributed. Findings from the study showed that librarians need training in electronic scholarly communication and publication, online journal databases. On the general attitude of librarians towards digital training, it was discovered that

ICT has helped in making specific information available. The popular inhibiting factor to digital training was the limited electronic resources for training(Akpon, Nwadike&Onuselogu, 2016).

In a study of Knowledge Management in Academic Libraries in Akwa-Ibom state, Nigeria, was conducted among 47 academic librarians in state and federal college of education, polytechnics and universities. Questionnaire was used in data collection. The study found thatknowledge organization was the major knowledge management practices adopted, while staff motivation was consider as the major way of managing tacit and explicit knowledge for greater productivity. The other major finding was that financial pressure was discovered to be the major challenge to knowledge management in academic libraries in Akwa-Ibom state, Nigeria(Usoro&Effiong, 2015). Assessing the empirical literature, knowledge organization (with exception of ICT) was given due consideration as opposed to knowledge sharing.

Aliyu (2016) investigated the use of ICT in information sharing among academic scientists in federal universities in North East, Nigeria. Results showed that majority of the respondents neither have personal websites, web pages nor belong to online professional organizations. However, majority of the respondents do not share information through web pages hence internet does facilitate information sharing with scientists. This research failed to adequately examine the use of ICT in knowledge sharing academic scientists.

In a related study, Abbas (2016) investigated the application of ICTs for knowledge and innovation management in five Nigerian agricultural research institutes in the five geopolitical zones of Nigeria with the target population of 1,363 respondents out of which 286 respondents were sampled. Questionnaire was the data collection instrument. The study found document management systems, organizational practice and routines, expert system, informal networks, training and knowledge intelligence, knowledge networks, knowledge culture, group ware s knowledge and innovation management systems available in the institutes. The discoveries from the study does not give account of knowledge sharing as the central focus of the study.

A study was conducted to determine the utilization of management tools and methods in the identification, creation, sharing, and for application of knowledge among libraries in Federal University of Agriculture, Markudi, Nigeria. Descriptive survey was used with population of professional and para-professional staff in the university library. A Sample size of 120 respondents was used through the administration of questionnaire, Response rate showed that 110 respondents completed and returned copies of questionnaire giving overallresponse rate of 91.6 percent, it was discovered that "social networking services" was the KM methods and tools for sharing knowledge among libraries. The study found that respondents indicated dissatisfaction with KM methods and tools. Financial pressures was the major barrier to the use of KM methods and tools (Mathew, Upev&Denen, 2016). The paper only established fact on the dissatisfaction of management method and tools as opposed to making special reference to knowledge sharing.

Awodoyin, Osisanwo, Adetoro and Adeyemo (2016) conducted a research to analyse the pattern of knowledge sharing among librarians in Nigeria. Five research questions were used to guide the study and include variables such as extent, areas, channels and perceived benefits of knowledge sharing as well as inhibiting factors to knowledge sharing among librarians.

Descriptive survey research was used with the target population of 117 librarians in 12 selected academic libraries in Ogun State, Nigeria. Questionnaire was the only data collection instrument and was subjected to pilot study (test – retest method) to ensure reliability of the instrument. Descriptive analysis was used to analysed the data collected.

Majority of the respondents indicated face-to-face interaction and mobile phone as channels of knowledge are shared about scholarly communication and communication value while new library practice was used among librarians. Benefit of knowledge sharing include enhancement of effectiveness and benefit both the person that generate and share knowledge. Lack of understanding on the effective sharing of knowledge was the major obstacle.

The study was centred on knowledge sharing but fail to examining the use sophisticated ICT facilities in knowledge sharing. Above all, the empirical literature review that questionnaire was the only data collection instrument used. Other instruments and techniques (experiment, interview, teleconferencing, video conferencing, e-mail etc) need to be use in data collection.

5. Methodology

Survey research design was used with the target population of 2,080 undergraduate students in three university-based library schools (otherwise known as the Department of Library and Information Science (LIS) / Library and InformationTechnology (LIT), respectively) in Northern Nigeria. These library schools are: Ahmadu Bello University, Zaria with a population of 748 undergraduates, Bayero University, Kano 1,015 and Federal University of Technology Minna 317 undergraduates respectively. These three universities were the first, second and third generation universities, thus are the conventional and specialized universities. The choice of these library schools was due to the following reasons:-

Ahmadu Bello University (ABU) Zaria was the second university to establish LISschool and first to commence undergraduate programme in LIS in Nigeria and Northern Nigeria.Bayero University Kano(BUK) was the first university in the Nothern Nigeria to run BA/BscLibrary Science, i.e, a teaching course will be offered in Art, Social or Science discipline. Federal University of Technology(FUT)Minna was the first university in Nigeria, Northern Nigeria and North Central Nigeria in particular too offer B.Tech in Library and Information Technology(LIT).
The table shows the population distribution of undergraduate students by library schools and levels.

Table 1: Population of undergraduate students

Institutions	100 Level	200 Level	300 Level	400 Level	500 Level	Total
- A.B.U., Zaria	189	167	240	152	*	748
- B.U.K., Kano	183	283	279	270	*	1,015
*F.U.T., Minna	93	77	54	63	30	317
Total	**465**	**527**	**573**	**485**	**30**	**2,080**

The Federal University of Technology, Minna is a specialized university and hence runs 5-yearprogrammes in all undergraduate courses including librarianship. A.B.U., Zaria and B.U.K Kano are conventional universities and run 4- year programme in Arts, social and management sciences.

A sample size of 337 was taken out of 2.080 undergraduate students in the three university based library schools. Stratified proportionate sampling technique was used to select the 337 undergraduate students using 68 students from 100 level, 87 from 200 level, 103 from 300 level, 73 from 400 level and 6 students from 500 level respectively in Zaria, Kano and Minna library schools. However, where population is to be effectively handled, a researcher can use appropriate sampling technique to obtain adequate and reliable representative sample (Igwe, et al, 2015. After identifying subgroup from the population, a sample was chosen from each stratum in a proportion (Aina, 2004). A sample size of 337 undergraduate was drawn from the strata i.e levels of undergraduate programmes in three library schools as shown in table 2

Table 2: Sample Distribution for Undergraduate Students

Institutions	Population	Sample by levels					Sample Size	% Sample Size
		100	200	300	400	500		
A.B.U., Zaria	748	29	25	47	20	*	121	36
B.U.K., Kano	1,015	24	50	48	43	*	165	49
F.U.T., Minna	317	15	12	8	10	6	51	15

*Run 400 year undergraduate programme in conventional universitiesin Nigeria.

Close-ended or structured type of questionnaire with alternative responses was used in data collection. It was designed to contain sections A, B, C and D i.e. bio-data of respondents, knowledge sharing, partners, impact of ICT on knowledge sharing and inhibiting factors to knowledge sharing respectively. These sections are in line with the four research questions. A total of 337 copies of the questionnaire were administered on undergraduate students through the respective heads of the three library schools. Descriptive statistics mainly frequency counts and percentages was used to analyzed the collected data.

6. Data Presentation and discussion of results

Response rate showed that out of 337 copies of questionnaire administered on undergraduate students, 321 copies were filled, returned and found in usable form and were analyzed into the following tables.

Table 3: Respondents by gender

Gender	Frequency	Percentage (%)
Male	182	57
Female	139	43
Total	**321**	100

Based on the 321 returned copies of questionnaire, 182 (57%) were male undergraduates while 139 (43%) were females. Higher number of male undergraduates might be attributed to the fact

that priority is given to male education as opposed to female education on the basis of social and religious perspectives in the northern part of Nigeria. Another reason that can be advanced for having less number of female respondents can be traced to religious reasons, where females and males are not allowed to mix together in the Northern part of the country, as Islam is considered the dominant religion in the geo-political zone particularly in two of the three states where library schools have been established.

Table 4: Respondents by levels of undergraduate programme

Level	Frequency	Percentage (%)
100	97	30
200	65	20
300	86	27
400	52	16
500	21	07
Total	**321**	100

Data showed that 97 (30%) being 100 level students were highestrespondents among the undergraduate levels; this is because they are the fresh year students. Respondents from 300 level were also high in number, hence that is a semi-senior level whereby most students have gotten basic librarianship. Fewer students 21 (7%) were discovered from 500 level; this is because only one library school was involved in the study that run five-year undergraduate programme.

Table 5: Knowledge being shared

Partners	Frequency	Percentage (%)
Among Friends	96	28
Among peer groups	88	26
Level/Course mates	144	43
Other levels	87	26

Respondents were requested to indicate the knowledge being shared in conjunction with the use of ICT. Majority of respondents indicated that they shared knowledge with their level / course mates which may be through GSM. It is not surprising as undergraduate students were pursuing LIS programme with common goal. Least response showed that knowledge was shared among peer groups and students in other levels i.e. 100, 200, 300, 400 or 500 level respectively.

Table 6: Methods of knowledge sharing

Methods	Frequency	Percentage (%)
Classroom Interaction	97	29
Social media	109	32
Telephone calls	53	16
All of the above	76	23

The popular method of knowledge sharing among undergraduate students was social media platform with 109 (32%) responses, hence in the use of social media, the use of ICT is very paramount in this regard. Through this media, they can chat, discuss, disseminate information on academic and research matters using ICT. Next was the classroom interaction otherwise known as face-to-face contact or through Public Address System (PAS) for respondents to discuss issues affecting their academic career. This signifies that some undergraduate students in LIS schools do not use ICT but face-to-face interaction.Telephone call was the least method with 53 (16%) response probably due to the cost involve in buying credit card/airtime.

Table 7: Impact of ICT application on knowledge sharing

Impact	Frequency	Percentage (5)
Help in obtaining current information	144	43
help in the acquisition, dissemination and transfer of knowledge	127	38
Helps to establish network of colleagues within/outside Nigeria	96	28

One of the greatest impacts of Information Communication Technology on Knowledge sharing was that it helps in obtaining current information. Information Communication Technology has turned the entire world to smaller village where timely, reliable and current information now reach people within the shortest possible period. The knowledge management is all about the acquisition, dissemination and transfer of knowledge by which Information and Communication Technology helps to create network of colleagues within / outside Nigeria.

Table 8: Inhibiting factors to knowledge sharing

Factors	Frequency	Percentage (%)
Time	102	30
Level of programs	98	29
Lack of confidence on people	88	26
Lack of communication skill	66	20
Difference in level of experience	100	30
Attitudes	133	39
None of the above	46	14
Others	34	10

Highest respondents indicated attitudes as the obstacle to knowledge sharing among undergraduate students. One of the attitudes could be undergraduate student hoarding information at the expense of sharing it with their course mates.

7. Discussion of Results

Research question one was to sought to find out the knowledge sharing partners and the study revealed that course mates were the knowledge sharing partners in the three library schools. It is surprising as they geared toward the common goal of pursuing the undergraduate programme leading to the award of bachelor degree in librarianship. More so, all the undergraduates are with the same faculty / schools. This finding corroborates the finding of &Ottong (2008) as the co-researchers discovered that raffia artisans (in Ikot-Ekpene Local Government Area of Akwa-Ibom State of Nigeria) do not freely share their experience and beliefs with others.

Research question two sought to find out the methods used in knowledge sharing. Finding showed that 109 (32%) respondents indicated social media platform. It is evident that

information and knowledge are shared by means of various social media platform such as Watsapp, IMO, etc.This finding agrees with those of (Tella&Isah,2010;Mahewet al, 2016) but disagrees with Usoro&Effiong (2015). The former co-researchers discovered that the participation in online forum encourage knowledge sharing between participants and high level of regularity compared to face-to-face interaction. The study reported social networking services as the popular KM methods and tools used for sharing knowledge among librarians in Federal University of Agriculture, Markudi, Nigeria(Mathew et al, 2016).The study found that knowledge organization was the highest of the responses which respondents considered to be the popular knowledge management practice adopted by academic librarians in Akwa-Ibom state, Nigeria (Usoro&Effiong, 2015).

Research question three was to find the impact of ICT application on knowledge sharing and result showed that 144 (43%) being highest indicated that it helps in obtaining current information. With ICT in this 21st century, LIS students / professional are kept abreast of happening in the LIS field. This finding conform with those of Ojokheta (2009) and Akpom, Nwaduke&Onuselogu (2015), respectively. The former researcher reported that exposure to e-mail has led to increase in number of assignment submitted by students. The later researchersreported ICT as tool in making information available.

Research question four was to find out inhibiting factors to knowledge sharing among LIS undergraduate students. Findings showed that 133(34%) of respondents indicated "attitude" of students to affect knowledge sharing. The students could develop nonchalant attitude of not cooperating in knowledge sharing and above all, some might develop attitude of not hoarding information and knowledge to themselves. This finding agrees with that of Utui&Ottong (2008) but disagree with those of Tella&Isah (2010) and Akpom, Nwadike&Onuselogu (2015) and Usoro&Effiong (2015) respectively.

Ntui and Ottong (2008) reported that Raffia artisans do not freely share their experience and ideas with other parties. In disagreement with the present finding, Tella&Isah (2010) discovered incessant power outage as the major problem to the effective participation in online discussion forum. Akpom, Nwadike&Onuselogu (2015) reported the popular inhibiting factor to digital training as "limited resources for training". Usoro and Effiong (2015) studied knowledge management in academic libraries in Akwa-Ibom state, Nigeria and discovered that financial pressure was the major inhibiting factor to knowledge management in academic libraries in Akwa-Ibom state, Nigeria.

The major findings from the research questions contradicts the findings by Aliyu (2016), Abbas (2016) andAwodoyin*et al.,* (2016) respectively.Aliyu (2010) and Abbas (2016) discovered that majority of scientist neither has personal websites, web pages nor belong to online professional organization as they do not share knowledge through web pages. Abbas (2016) discovered various knowledge and innovation management systems in research institutes in Nigeria.Awodoyin*et al.,* (2016) discovered face-to-face interaction and use of mobile phone as channels of knowledge sharing while scholarly communication and communication value as well as new library practice were used among librarians. The co-researcher also discovered lack of understanding on the effective sharing of knowledge as the major obstacle.

Attitude of the respondents was considered as the major and popular inhibiting factor to knowledge sharing. One's behaviour towards fellow individuals, character,etc to large extent affects knowledge sharing. However, other factors come to play in knowledge sharing such as time, level of programme and confidence communication skill which were in descending order.

8. Summary of findings

From the analysis and interpretation of data, the following were the major findings:-
1. Undergraduate students share knowledge among themselves pursuing LIS programme in the same level;
2. Social media was the major platform used in knowledge sharing;
3. Using ICT in the course of knowledge sharing enable undergraduate student to have up to date information/knowledge in the field librarianship
4. Attitude has affected the knowledge sharing.

9. Conclusion

The study has revealed that the research question one was answered with the knowledge sharing among course mates, there will be cross-fertilization of ideas which will also be empowered through social media platform. Although, exchange of ideas will be restricted to students in the same class / level, other levels will be at disadvantage. Social media was considered as the major method of knowledge sharing. This can be achieved through whatsApp, twitter, facebook and IMO.Thus, this has answered research question two.ICT as a tool has being a key player in all aspects of human endeavor thereby providing current information, thus has answered research question three.The attitude can make positive or negative contribution to knowledge sharing among undergraduate students in library schools in Northern Nigeria. This has answered research question four.

10. Recommendations

Based on the major findings, the study recommended that:
1. Knowledge sharing should not be limited to course mates alone but also be extended to LIS undergraduate students at all levels, peer group, friends among academic and nonacademic.
2. Social media should not be the only platform for knowledge sharing but rather there should be classroom interaction, face-to-face interaction, phone calls, e-mailing, video conferencing, telephone conferencing, etc.
3. The use of ICT in knowledge sharing should not only enhance obtaining current information but in the acquisition, dissemination and transfer of knowledge as well as establishing network of colleagues within or outside Nigeria.
4. There should be a positive change in attitude e.g interaction with each other, expression of idea and feelings and not hoard information and knowledge at their disposal. In during so, knowledge can be effectively shared among undergraduate students in library schools in Northern Nigeria.

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