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Zambia Library Association Journal (ZLAJ) is published twice yearly (April and October) by the Zambia Library Association. Communications about subscriptions and advertisements should be directed to the Editor-in-Chief, University of Zambia, P.O. Box 32379, Lusaka, Zambia. Email: akakandelwa@unza.zm or aakakandelwa@gmail.com

Volume 30, Number 1 & 2 2014

ISSN: 0049-853X

Editorial

We welcome you to the Zambia Library Association Journal, volume 26, issue number 1 & 2 2015.

It is our sincere hope that our readers will find these papers very useful.

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Use of Cell Phone by Library and Information Science Undergraduates in Selected Nigerian Library Schools

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Abstract

The study examined use of cell phones by library and information science (LIS) undergraduate students. The study drew on 220 LIS undergraduate students from four library schools in Nigeria. Survey approach was adopted in the conduct of the study with the use of questionnaire for the collection of data. Five research questions were developed and answered. The results confirmed that LIS undergraduates are heavy users of cell phones for academic activities and that Nokia, Samsung and Techno are the types of cell phones commonly used by the LIS undergraduate students. Various academic uses of cell phone revealed among LIS undergraduate students include communication with colleagues, staying current of the class announcements, communication with lecturers and receiving and sending notes with submission of assignment and others. Majority of LIS undergraduate students use cell phones daily and on a weekly basis. Positive effects of cell phones indicated by the respondents include increase in GPA and record of good performance while the negative perceived effects revealed include high distractions and loss of concentrations especially during lecture hours. An overwhelming percentage of LIS students indicate high tariff and power outage as the major challenges they face with the use of cell phones for academic activities. Based on these findings, the study recommends that GSM service providers should consider reducing their tariff to enable the students benefit further from the potentials of cell phones in terms of its usefulness for academic activities. Similarly, the authority in charge of power in the country should consider stabilizing power generation to enable charging of cell phones by the students.

Keywords: Cell Phones, Academic Activities, Grade Performance Average (GPA), Library Schools, Library and Information Science, Undergraduate Students, Nigeria.

Introduction

Increased popularity of cell and smart phones in recent years has attracted research attention. Cell phones are seen as a mixed blessing. Teens say phones make their lives safer and more convenient. As cell phones have become more available, they are increasingly owned and used by teens, adults and old people. Further, as handsets become more loaded with capabilities ranging from video recording and sharing, to music playing and internet access, teens and young adults have an ever-increasing repertoire of use (Ezemenaka, 2013). With the advent of affordable digital devices, use of technology by students and instructors is increasing in college and university classrooms (Hoekstra, 2009). Today, smartphones are central to college students' lives, keeping them constantly connected with friends, family and the Internet. Students' cell phones are rarely out of reach

whether the setting is a college classroom, library, recreational center, and cafeteria or dorm room. As cell phone use continues to increase, it is worth considering whether use of the device is related to measurable outcomes important for student success, such as academic performance.

Cell phones are not going away. The devices are becoming more advanced every single day and the modern technology is something our students need to know. Not only do they enable students' access to the Internet and a variety of other communication networks, but they often provide such applications as list builders, planners and other tools which can be utilized by students. This is differentiated learning right at their fingertips. Cell phones are the way of the future. Instead of spending time and energy making sure students do not bring them to school, we should be investing that same energy into showing them **how** to use them properly. This includes teaching online safety as well as instruction on the huge amount of technological power and applications they have in their hands. This will be a life skill and it is the responsibility of educators to teach life skills.

Indeed, we are moving into an era when mobile devices are not just for talking and texting, but can also access the internet and all it has to offer (Pew Research Center, 2010). The cell phone is one of the most rapidly growing new technologies in the world (Rebello, 2010). In 2001, cell phone users were less than a billion worldwide with the majority of the users from the developed countries. By the end of 2010, however, cell phone subscriptions had reached five billion worldwide with subscriptions from developing countries outnumbering that of the developed countries (Kelly, 2009; Rebello 2010). Currently, there are nearly 7 billion mobile subscriptions worldwide, estimates The International Telecommunication Union (ITU, 2014). This is equivalent to 95.5 percent of the world population. That's a billion extra mobile subscriptions in three years, but growth is slowing – 2011: 5.9 billion; 2012: 6.2 billion; 2013: 6.7 billion; 2014: 6.9 billion. Obviously, this increase includes a sharp increase in the number of cell phones used by the younger generations.

According to (Graham, 2011) the shift from access deficit to attention deficit has some very practical ramifications for schools. Certainly it gives perspective on the question of whether to allow cell phones in the classroom. On KQED MindShift, Watters (2011) argued for cell phones in the classroom because they (or at least smartphones) are powerful research tools. But the ability to get to information is not the problem; what students lack is the critical thinking skill to sort filter and interpret information. Recent research by (Graham, 2011) has shown that students are good at getting to information, but weak at knowing what to do once they get there. So we must be protective of the classroom as a uniquely effective learning environment.

A new study conducted by TRU and reported by Nielson (2013) provides a body of research which supports the idea that students use cell phones to learn, and also that schools are not acknowledging or supporting them fully, yet. This research supports the work of innovative educators who are guiding today's generation text and will help in the effort of getting more schools to stop fighting and start embracing student use of mobile devices for learning in school. Rather than banning, the study highlights the fact that if we meet children where they are we can leverage their use of mobile devices for powerful learning. The research supports the fact that mobile technology can inspire and engage students by letting them lead their learning and supporting them in choosing and using the devices they know, love, and prefer. The study reveals that whether allowed to use their devices in school or not, students are moving forward and using them for learning even if their school is lagging behind in embracing student-owned devices.

In terms of functionality, cell phones complete many of the same tasks as an Internet connected computer. As such, today's cell phones allow users to call, text, e-mail, video conference, microblog, interact on social-networks, surf the Internet, watch and share videos and pictures, play video games, and utilize a tremendous array of software driven applications. In contrast to traditional notions of the computer, the mobile nature of the cell phone allows these services to be accessed almost anywhere and at almost any time. Considering that cell phones and their growing suite of applications are typically within arm's reach of nearly everyone, it is worth considering what influence they may have on users' beliefs, attitudes, behaviors and behavioral outcomes.

Cell phone usage among university undergraduates can be harmful to academic achievement. A cell phone provides an easy distraction to a student, and research has shown the equivalent of a one letter grade drop in achievement when the cell phone is being used for non-academic purposes in the classroom (Davis, 2013). Although cell phones have great potential in the classroom, their potential for good may be outweighed by their usage for sexting, cyber bullying, and cheating. Further study is needed to clarify the role, if there is one, of the cell phone in the university classroom. Are students using cell phones in the classroom? In what ways are students using cell phones for academic participation in the classroom? This study will provide answer to all these pertinent questions. However, the study is significant in view of the fact that it kind is currently limited in the Nigeria Library and Information Science research context.

Objectives of the study

In the light of the above, the main objective of this study is to examine cell phones use among Library and Information Science undergraduates in selected library schools in Nigeria. To achieve this main objective, the following specific objectives are considered.

1. Investigate LIS students use cell phones in the classroom.
2. Investigate the rate of cell phone use among LIS undergraduate students.
3. Investigate LIS undergraduate students use cell phones for academic activities.
4. Investigate the effect of cell phone usage on students' academic performance.
5. Investigate problems LIS undergraduate students encounter when using cell phones for academic activities.

Research Questions

To achieve the objectives above, the following research questions were developed to guide the study.

1. To what extent do LIS students use cell phones in the classroom?
2. What is the rate of cell phone use among LIS undergraduate students?
3. What are the ways in which LIS undergraduate students use cell phones for academic activities?
4. What is the perceived effect of cell phone usage on LIS undergraduate students' academic performance?
5. What problems do LIS undergraduate students encounter when using cell phones for academic activities?

Related Studies

Research investigating CPU use and academic performance is limited and methods vary substantially from study to study. Nevertheless, results suggest a relationship exists. Jacobsen and Forste (2011) identified a negative relationship between the use of a variety of electronic media including cell phones (calling and texting) and academic performance (self-reported GPA) among first year university students in the United States. Using data collected from a sample of Taiwanese adolescents, Yen et al. (2009) found an association between CPUse (calling and texting) and participants' self-assessment of whether or not they had allowed CPUse to interfere with "important social, academic, or recreational activities" during the previous year (p. 866). Hong, Chiu, and Hong (2012) found daily CPU use (calling and texting) to be correlated with a self-reported measure of academic difficulty among a sample of female, Taiwanese university students. Finally, Sánchez-Martínez and Otero (2009), using a sample of Spanish high school students, found a relationship between "intensive" CPU use and school failure. School failure was operationalized as having repeated the previous year's grade level or failing four or more courses during the previous academic year. Although these studies utilized a variety of self-reported measures, academic performance was consistently and negatively associated with CPUse (calling and texting).

Several researchers have pointed to multi-tasking as an explanation for the negative relationship identified between CPUse and academic performance (Jacobsen & Forste, 2011; Junco & Cotton, 2011, 2012; Rosen, Carrier, & Cheever, 2013; Wood et al., 2012). Jacobsen and Forste (2011) reported that over two-thirds of the university students in their study used electronic media (including cell phones) while in class, studying, or doing homework.

Likewise, Sánchez-Martínez and Otero (2009) found that although CPU use was typically prohibited in the classroom, half of the students in their sample reported bringing the device to school and keeping it on during class. In two studies specifically targeting multi-tasking and academic performance, Junco and Cotton (2011) examined large samples of college students and found that sending text messages and checking Facebook while studying or doing homework was common behavior. Furthermore, this behavior interfered with schoolwork and was negatively related to overall college GPA. Wood et al. (2012) measured the influence of multitasking with an array of digital technologies (texting, e-mail, Facebook, MSN messaging) on real-time learning. Participants were randomly assigned to various conditions (multi-tasking with one of the four technologies or no multitasking) while participating in classroom learning activities. After the learning activities were complete, a 15-item multiple choice test was used to assess learning. Results showed that multi-tasking with any of the technologies examined had a negative impact on learning. Most recently, Rosen, Carrier et al. (2013) observed the study behaviors of a sample of middle school, high school, and university students and found participants typically became distracted by media such as Facebook and texting in less than 6 min after initiating a studying session. Furthermore, measurements of daily Facebook use and daily texting behavior predicted off-task behavior during study periods. Notably, all of the media related technologies associated with increases in multi-tasking and decreases in academic performance are now commonly accessed with a single, Internet connected cell phone.

Research has indicated that student performance is significantly correlated with cell phone use. A study by Duncan, Hoekstra, and Wilcox (2012) demonstrated that students who reported regular cell phone use in class showed an average negative grade difference of 0.36 ± 0.08 on a four-point scale. Students also underestimated the number of times they accessed their phones while in class. While students reported an average access rate of three times per class period, observation data showed the rate was closer to seven times per period. An interesting finding is that other students are distracted when students text in class (Tindell and Bohlander,

2012). So while a student may claim he's only hurting himself when texting, studies show that others are affected also.

Duncan, Hoekstra and Wilcox (2012) combined observation, survey, and interview data, this research assesses the effects of technology use on student attitudes and learning. Data were gathered in eight introductory science courses at a major university. Results show a significant negative correlation between in-class phone use and final grades, with use of cell phones corresponding to a drop of 0.36 ± 0.08 on a 4-point scale where 4.0 = A. These findings are consistent with research (Ophir, Nass, and Wagner 2009, *Proceedings of the National Academy of Sciences*, 106, 15583) suggesting students cannot multitask nearly as effectively as they think they can. While 75% of students reported regular cell phone use, observation suggests undergraduates typically underreport the frequency of their in-class use of digital devices.

Lepp, Barkley, and Karpinski, (2013) surveyed more than 500 university students. Daily cell phone use was recorded along with a clinical measure of anxiety and each student's level of satisfaction with their own life, or in other words happiness. Finally, all participants allowed the researchers to access their official university records in order to retrieve their actual, cumulative college grade point average (GPA). All students surveyed were undergraduate students and were equally distributed by class (freshman, sophomore, junior and senior). In addition, 82 different, self-reported majors were represented. Results of the analysis showed that cell phone use was negatively related to GPA and positively related to anxiety. Following this, GPA was positively related to happiness while anxiety was negatively related to happiness. Thus, for the population studied, high frequency cell phone users tended to have lower GPA, higher anxiety, and lower satisfaction with life (happiness) relative to their peers who used the cell phone less often. The statistical model illustrating these relationships was highly significant.

The various studies above have confirmed the fact that college and university students use cell phones for one academic activity or the other and that this use has in one way or the other affect their GPA positively. However, there have been limited studies in this part of the world regarding whether or not the use of cell phones has impacted academic and learning outcomes of the undergraduate students particularly those in library schools. Or does it mean that the use of cell phones is not relevant to the teaching and learning in Library and Information Science? Providing answers to all these questions prompted this study.

Methodology

Design: The study adopted a survey research approach. This approach seems to be the most adopted in the conduct of relevant study. Again, this approach was adopted because it affords the researcher an opportunity to reach out to a considerable number of respondents. Furthermore, survey approach gives opportunity for making generalization to the entire population.

Population: The target population for this study was Library and Information Science LIS undergraduate students in four Library Schools: university of Ibadan Library, Tai-Solarin University, University of Ilorin and Kwara State University Library schools.

Sample and Sampling Procedure: To select the sample, the study focused only on the LIS undergraduate students from these four library schools. This is because of the limited time available for the conduct of the study. Sample was taken proportionately thus: University of Ibadan, =80, Tai-Solarin = 40, University of

Ilorin, 60, Kwara State University = 40. This amounted to 220 students thereby represent the sample for the study.

Instrument for Data Collection: A self-designed questionnaire was adopted for the collection of data from the respondents. The questionnaire was titled ‘Use of Cell Phones by LIS UG Students’. The questionnaire contained two sections. Section 1 required the respondents’ bio-data information while section 2 contained the items. Items in the questionnaire focused on the objectives and the variables in the study.

Validity and Reliability: Validity of the instrument used for the data collection on this study was determined by given it to two experts in Library and Information Science research. The comments by these two experts lead to the modification of the items in the questionnaire. The valued judgment by the expert adjudged the instrument of having both the contents and face validity. The questionnaire before administration was trial tested on 20 respondents who were not library and Information Science students and did not eventually took part in the study. Through test-retest reliability method of two weeks interval, the responses collected from these respondents. These two groups of score were thereafter correlated. Through a Crobach alpha, the correlation co-efficient return an $r = 0.80$. This adjudged the questionnaire to be used for data collection in this study.

Procedure of Administration: The researchers targeted the respondents in their respective university during lectures. Permission was sought from the various lecturers in charge of the lectures for the administration of the instrument. The questionnaire was administered and collected immediately. This exercise took four weeks i.e. a week for each of the institution. The copies of the questionnaires were collected immediately after filling. In all a total of 220 copies were retrieved throughout the four weeks. These 220 constituted the sample for the study and were used for the data analysis.

Method of Data Analysis: Data collected through the administration of the questionnaire was analysed using percentages and frequency count. The results of the analysis are presented as follows:

Table 1: Bio-Data Distribution

Demographics	Values	Frequency (n=220)	Percentage
Gender	Male	102	46.4
	Female	118	53.6
Age	17-25 years	180	81.8
	26- 30 years	30	13.6
	31 - 35 years	5	2.3
	36 year +	5	2.3
Institution	University of Ibadan	80	36.4
	Tai-Solarin University	40	18.2
	University of Ilorin	60	27.3
	Kwara State University	40	18.2

Table 1 reveals that the 118 respondents representing (53.6%) were female while 102 respondents representing (46.4%) were male. This implies that there were more female that took part in the study than male. Similarly, the table reveals the distribution of the respondents based on their year of study. This indicates that 80 respondents (36.4%) was selected from year one meaning that 20 each were selected from year 1 in each of the participating school. From year 2, a total 40 respondents (18.2%) was selected from year 2 thereby indicating 10 each from the participating school. Again, 60 respondents (27.3%) was taken from year 3 that is

15 each from the participating school; while 40 (18.2%) was also taken from the year 4 i.e. 10 each from the participating school. This gives a total of 220 respondents that took part in the study.

The age distribution of the participants in this study reveals that 180 (81.8%) was between the age of 17-25 years, 30 (13.6%) was between the age of 26-30 years; 5(2.3%) each was between 31-35 years and 36 years and above respectively. This implies that participants' ages 17-25 years constitute the majority of the participants. The distribution based on institution reveals that participants were selected from four schools. These are University of Ibadan, 80 (36.4%), Tai-Solarin University of Education, Ijebu-Ode, Ogun State, 40 (18.2%), University of Ilorin, 60(27.3%) and Kwara State University, Malete 40 (18.2%). This also implies that there was more participant from the University of Ibadan than any other Library Schools in the study. This might be because Ibadan has a higher number of students in their library school than any other library schools in that took part in the study.

On the use of cell phones for academic activities, the results reveal that 180 (81.8%) indicate they use cell phones regularly for academic activities, 40 (18.2%) of the respondents indicate they use cell phones for academic activities almost always while no candidate indicate not sure or not at all. This confirms that respondents in this study do use cell phones for academic activities (Table 2).

Table 2: Use of Cell Phones for Academic Activities by LIS UG Students

Using Cell Phones for Academic	Frequency	Percent
Always	180	81.8
Almost always	40	18.2
Not Sure	0	0
Not at All	0	0
Total	220	100.0

On the types of cell phones mostly used by the LIS undergraduate students, the results show that Nokia is the most common type with 80 respondents (36.4%) followed by Samsung and Techno 40 respondents (18.2%) each and next to this, is BlackBerry 30 respondents (13.6%) while other followed with 10 (4.6%). Sonny Erickson was the least used type of phones by the LIS undergraduates with 5 (2.3%) of the respondents. This implies that Nokia, Samsung and Techno are the types of phones commonly used by the LIS undergraduate students (Table 3).

Table 3: Types of Cell Phones Used by LIS Undergraduate Students

Types of Cell Phones	Frequency	Percent
Nokia	80	36.4
Samsung	40	18.2
IPhones	15	6.8
Sonny Ericson	5	2.3
Techno	40	18.2
BlackBerry	30	13.6
Others	10	4.6
Total	220	100.0

Table 4 reveals results on the academic uses of cell phones. This is a multiple items response format in which respondents can tick more than one option. The results reveal that 97.7% of the respondents uses cell phones

to communicate with colleagues, 91.4% use cell phones to stay current of the class announcements while 90.9% each indicate communication with lecturers and receiving and sending notes. This is followed by 90% of the respondents who indicate they use cell phones for submission of assignments; 68.2% use it for searching for the course related materials and information while 27.3% indicate others. This implies that there are various academic uses of cell phone among LIS undergraduate students.

Table 4: Academic Uses of Cell Phones

Academic Purposes of Using Cell Phones	Frequency	Percent
To stay current of class announcements	201	91.4
Communicate with lecturers	200	90.9
Communicate with colleagues	215	97.7
Submit Assignments	198	90.0
Search for course related information	150	68.2
Receiving and sending notes	200	90.9
Others	60	27.3

Table 5 indicates the extent of cell phone use by the LIS undergraduate students. The results reveal that 160 respondents (72.7%) use cell phone on a daily basis, 60 (27.3%) use it on a weekly basis while none of the respondents indicate using cell for fortnightly, monthly, bi-monthly or not at all. This implies that the LIS undergraduate students are heavy user of cell phones for academic activities.

Table 5: Extent of Cell Phones Use

Frequency of Cell Phones Use	Frequency	Percent
Daily	160	72.7
Weekly	60	27.3
Fortnightly	0	0
Monthly	0	0
Bi-monthly	0	0
Not at all.	0	0
Total	220	100.0

On the perceived effect of cell phones use on the academic performance of the LIS undergraduate students, the results reveal that (95.5%) have the perception that it has contributed to the increase in their GPA. In addition, (94.6%) indicated it has facilitates communication with their colleagues and lecturers thereby making them to record good performance. Similarly, the results reveal that cell phones has enhanced timely submission of their assignments (90.9%), enable them the opportunity of get quick answer to quiz questions (81.8%). However, negative effects of cell phones were also indicated as (68.2%) of the respondents indicates that it usually leads to high level distractions especially during lecture hours and (45.5%) indicated the fact that they usually loss concentrations thereby resulting to lower grade.

Table 6: Perceived Effects of Cell Phones Use on LIS UG Performance

Cell Phones Effects	Frequency	%
Increased GPA	210	95.5
Facilitate Communication with colleagues and lecturers thereby contribute to good performance	208	94.6
High level Distraction especially during lecturers	150	68.2
Loss of concentrations resulting to lower grade	100	45.5
Ability to get quick answer to quiz items	180	81.8
Timely assignments submission	200	90.9

On the challenges associated with the use of cell phones, high tariff was indicated as the most common challenge with 215 (97.7%) of the respondents. This is followed power outage indicated by 210 (95.5%). Next to this is connectivity problem indicated by 205 (93.2%) and loss of SIM card indicated by 200 (90.9%) of the respondents. Stealing and misplacement of cell phones followed as indicated by 150 respondents (68.2%) while others was the least with 100 respondents (45.5%).

Table 7: Challenges of Cell Phones Use by LIS UG students

Challenges	Frequency	Percent
Loss of SIM card	200	90.9
Power outage for charging batter	210	95.5
Connectivity Problem	205	93.2
Stealing/Misplacement	150	68.2
High Tariff by service providers	215	97.7
Others	100	45.5

Discussion

The study has confirms that LIS undergraduate users are heavy users of cell phones for academic activities and that Nokia, Samsung and Techno are the types of phones commonly used by the LIS undergraduate students. There are various academic uses of cell phone among LIS undergraduate students including communication with colleagues, staying current of the class announcements, communication with lecturers and receiving and sending notes with submission of assignment and others. Meanwhile, various uses of cell phones to support academic activities have been reported in this literature. Therefore, the results indicated in this study that cell phones is used for various academic activities is not a misplacement or misconception.

Majority of LIS undergraduate students in this study, use cell phones, daily and on a weekly basis. This is in agreement with Lepp, Barkley, and Karpinski, (2014) surveyed of more than 500 university students with the report that daily cell phone use was recorded. LIS students tend to increase their cell phone use in as much as the phones is given them what they want and yielding results, positive one for that matter.

Positive effects of cell phones indicated by the respondents in this study include increase in GPA and record of good performance. This is in consonant with the report of a study on using data collected from a sample of Taiwanese adolescents by Yen et al. (2009) who found an association between CPU use (calling and texting) and participants' self-assessment of whether or not they had allowed CPU use to interfere with "important social, academic, or recreational activities" during the previous year. Similarly, Hong, Chiu, and Hong (2012) found daily CPU use (calling and texting) to be correlated with a self-reported measure of academic difficulty among a sample of female, Taiwanese university students. These two reports support the current finding in this study. However, the report by Forste (2011) who identified a negative relationship between the use of a variety

of electronic media including cell phones (calling and texting) and academic performance (self-reported GPA) among first year university students in the United States contradicts this finding in this study. In a similar dimension, Duncan, Hoekstra, and Wilcox (2012) demonstrated that students who reported regular cell phone use in class showed an average negative grade difference of 0.36 ± 0.08 on a four-point scale. Students also underestimated the number of times they accessed their phones while in class. While students reported an average access rate of three times per class period, observation data showed the rate was closer to seven times per period. This also buttresses the current finding in this study.

The negative perceived effects revealed include highly distractions and loss of concentrations especially during lecture hours. This negative perceived effect of cell phones revealed in this study corroborate the finding by Sánchez-Martínez and Otero (2009), who used a sample of Spanish high school students and found a relationship between “intensive” CPU use and school failure. School failure was operationalized as having repeated the previous year’s grade level or failing four or more courses during the previous academic year. Although these studies utilized a variety of self-reported measures, academic performance was consistently and negatively associated with CPUse (calling and texting). The results of another study by Duncan, Hoekstra and Wilcox (2012) show a significant negative correlation between in-class phone use and final grades, with use of cell phones corresponding to a drop of 0.36 ± 0.08 on a 4-point scale where 4.0 = A. These findings are consistent with research (Ophir, Nass, and Wagner 2009) suggesting students cannot multitask nearly as effectively as they think they can.

An overwhelming percentage of LIS students indicate high tariff and power outage as the major challenges they face with the use of cell phones for academic activities. There is no technology without a side effect or hindrances to its functionality. The cell phone is not an exception. Hence, the challenges revealed in this study associated with cell phone use are not surprising.

Conclusion

The study has confirms that LIS undergraduate users are heavy users of cell phones for academic activities and that Nokia, Samsung and Techno are the types of phones commonly used by the LIS undergraduate students. There are various academic uses of cell phone among LIS undergraduate students including communication with colleagues, staying current of the class announcements, communication with lecturers and receiving and sending notes with submission of assignment and others. Majority of LIS undergraduate students use cell phones daily and on a weekly basis. Positive effects of cell phones indicated by the respondents include increase in GPA and record of good performance while the negative perceived effects revealed include highly distractions and loss of concentrations especially during lecture hours. An overwhelming percentage of LIS students indicate high tariff and power outage as the major challenges they face with the use of cell phones for academic activities. In the light of this, I can be conveniently concluded that use of cell phones is beneficial to the LIS undergraduate students. Moore so, as there as the perceived positive effects, there are also the perceived negative effects.

Recommendations

This study has examined the use of cell phones by the LIS undergraduate students and the results have reveal that these students are heavy users of cell phones among others. However, high tariff and power outage were reported as the greatest challenges facing the use of cell phones. In the light of this, the GSM service providers are called upon to consider reducing their tariff to enable the students benefit further from the potentials of cell phones in terms of its usefulness for academic activities. Similarly, the authority in charge of power generation

in the country should consider stabilizing the power generation to enable charging of cell phones by the students. The university authorities must be more proactive by ensuring conformity to the university laid down rules and regulations on student's use of mobile phone device during class session.

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A Review of Literature on Digitization and Its Implications for Digital Preservation in Africa

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Abstract

The preservation of records, artifacts and information and knowledge materials is increasingly recognized as being crucial to national development. The globalization of the digital procedure of information and records management poses a wide range of opportunities and challenges to many countries, especially in Africa. The purpose of this paper was to review relevant literature on digital preservation in Africa with a view to underscoring the challenges and opportunities for enhancement of digital preservation in Africa. The paper described the features and concept of digitization, its merits and demerits from the point of view of available literature. Literature of the conceptual framework for digitization and the Open Archival Information Systems Reference Model were also reviewed. The paper further considered the state digital preservation in Africa and the way forward. Finally, recommendations were proffered on the way to enhance digital preservation in Africa.

Keywords: Digitization, Preservation, Digital Preservation, Africa.

Introduction

The primary function of all archival institutions is the preservation of symbols, sources of knowledge and information for the benefit of present and future generations. A great deal can be learnt concerning past events through evidence contained in the form of documents, oral traditions and material artifacts. The proper care of these materials over a long period of time is an issue of central importance to the administration of archives. To remain continually accessible, the materials must be protected from agents of deterioration and destruction. Preservation encompasses a wide variety of interrelated activities designed to prolong the useable life of books, archive manuscripts and artefact. Preservation is an essential or core function of the librarian, archivist or information professional. Preservation is rather an umbrella term for many of the policies and options for action including conservation treatments. It is the acquisition, organization and distribution of resources to prevent further deterioration or renew the usability of selected groups of Materials (Conway 1996).

The paper essentially reviewed existing literatures relating to best practices obtained world-wide in digital preservation with the aim and potential to making significant contribution to knowledge towards improving

existing practices in national heritage institutions. It addresses issues of digital preservation with a view to determining the role of digital preservation and the future direction of digital preservation in national heritage institutions in Africa. This was done by highlighting the present global information environment propelled by Information and Communication Technologies (ICTs) has made preservation of digital material more critical to archivists and information managers. Transmission of the cultural ventures of a people is paramount to library and information professional and record management (Banjo 1988).

In Africa, the importance of research on digital preservation techniques is particularly important not only because of the need to preserve African nations' abundant repositories of knowledge and cultural objects and symbols but also to ensure realistic updating of existing preservation techniques and infrastructure. The paper is expected to inform policy on the right approach and attitude towards the crucial task of standardizing the digital preservation techniques in national heritage institutions. Specifically the review sought to address the following issues.

- 1) Understand the nature and use of digital technology in the preservation and accessibility of archive materials.
- 2) Identify the advantages and disadvantages of Digital Preservation.
- 3) Determine the Emerging themes/ Trends in Digital Preservation Technology
- 4) Determine theoretical theories and models used in Digital Preservation
- 5) Identify the challenges involved in the use of Digital Preservation in Africa.
- 6) Identify the state of digital Preservation in Africa.
- 7) Identify the gaps noted in Digital Preservation in Africa

The Concept of Digitization

According to Eke (2011:1) digitization is “the art the art of converting the contents of a document from hard copy into machine-readable format”. Tsebe (2005) sees digitization as the conversion of non-digital material to digital material. Digitization refers to the process by which analog contents is converted into a sequence of 1 (ones) and 0s (zeros) and put into a binary code to be readable by computer. Hughes (2004:103) states that digitization “involves the transformation of analogue information from whatever form and whatever support to digital code using computer technologies”. He further mentioned that this may include electronic snapshot taken of scenes or photographs, films, manuscripts printed text and artworks scanned from document. Digitization process converts archival materials from formats that can be read by people (analogue) to a format that can be read only with the help of machines (digital). Masakazi (2009) asserted that digitization is the creating of multi-media databases enhanced by digital information and thus offering easy access to cultural and scientific heritage for large population of the users. Digitization therefore involves the conversion of non-digital material to digital formats.

Digitalization refers to a series of processes needed and used to ensure uninhibited access to digital materials for as long as necessary, involving planning, resource allocation, and application of preservation methods and technologies to ensure that valuable digital information remains accessible and usable at all time (Digital Preservation Coalition, 2008; Day, 2006). Digital preservation incorporates policies, strategies and actions required to achieve constant access to born and reformatted digital contents baring all unforeseen challenges. The goal of digital preservation is the accurate rendering of authenticated digital content over time (Becker et

al 2009). Digitizing materials is to enhance access and the long term preservation of information. The advantages of digitization were stated by Fabunmi, Paris and Fabunmi (2006) cited by Eke (2011:30) when they wrote that:

Digitization improves access to library resources. By digitizing library collections, information will be accessible to all instead of a group of researchers. Digital projects allow users to search for collections rapidly and comprehensively from anywhere at any time. Digitization makes the invisible to be visible. Several users can access the same material the same time without hindrance. It also removes the problem of distance, as users do not have to travel to libraries that possess the hard copies of library materials before they can access and use such materials.

Rothenberg (1999) asserts that to be effective, a digitization preservation programme must aim at:

The Provision of a single, extensible, long-term solution that can be designed once and for all and applied uniformly, automatically, and in synchrony (for example, at every future refresh cycle) to all types of documents and all media, with minimal human intervention.

- a) The Provision of maximum leverage, in the sense that implementing it for any document type should make it usable for all document types
- b) Facilitating document management (cataloguing, de-accessioning, and so forth) by associating human-readable labelling information and metadata with each document. It should retain as much as desired (and feasible) of the original functionality, look, and feel of each original document, while minimizing translation so as to minimize both labour and the potential for loss via corruption.
- c) Offering alternatives for levels of safety and quality, volume of storage, ease of access, and other attributes at varying costs, and it should allow these alternatives to be changed for a given document, or type of document at any time in the future.
- d) Providing single-step access to all documents, without requiring multiple layers of encapsulation to be stripped away to access older documents, while allowing the contents of a digital document to be extracted for conversion into the current vernacular, without losing the original form of the document.

The digital preservation environment involves some salient strategies. For instance, the Online Computer Library Center (OCLC) developed a long-term preservation strategy that consisted of:

- a) Assessing the risks for loss of content posed by technology variables such as commonly used proprietary file formats and software applications.
- b) Evaluating the digital content objects to determine what type and degree of format conversion or other preservation actions should be applied.
- c) Determining the appropriate metadata needed for each object type and how it is associated with the objects.
- d) Providing access to the content. (OCLC, 2006).

The long term preservation of digital objects requires the adoption of one or a combination of some of the following strategies:

- a. **Migration:** According to Garrett et al. (1996), migration is the transferring of data to newer system environments such as conversion of resources from one file format to another (e.g. from Microsoft Word to PDF) or from one operating system to another (e.g., from Microsoft to Linux) thereby making the resource fully accessible and functional. Day (2006) observed that there are two problems in the long term use of migration for digital preservation. These are: migration may cause problems in relation to authenticity (because digital materials are subject to a state of near continuous change), and that migration could be time-consuming and expensive for ‘large collections of heterogeneous objects, which would need constant monitoring and intervention’.
- b. **Refreshing:** According to Cornell University Library (2005), this is the transfer of data between two types of the same storage medium so that there would be no alteration of data. For example, transferring census data from an old preservation medium to a new one.
- c. **Replication:** This is the production of duplicate copies of data on one or more systems to forestall any likely software/hardware failure, intentional or accidental alteration, and environmental hazards. Digital material would tend to endure for longer period when replicated in several locations.
- d. **Emulation:** Emulation involves replicating of functionality of an obsolete system. It focuses on the hard- and software environment in which the object is rendered, rather than the digital object. It thus re-creates the environment in which the digital object was originally created (Rothenberg, 1998). However, the variability of emulation as an ideal solution for digital preservation is debatable as noted by Granger (2000).
- e. **Encapsulation:** Encapsulation is usually applied to collections that will go unused for long periods of time and it presupposes that preserved objects should be self-describing, virtually ‘inking content with all of the information required for it to be deciphered and understood’ (Day, 2006).

Advantages of Digitization

The reviewed literature indicates that the use of technology has become a core part of the institutional mission of museums, archives, and libraries around the world. Computer based system are now considered essential for many operational aspects of such memory institutions. These include collections management as in the use of administrative databases and online catalogues, exhibit planning, including the management of loaned objects such as administering paper work for insurance and transit and user services and outreach, including the provision of online catalogues and reference materials, as well as public service websites with general information about mission, collections and services (Arms, 2000; Ricky, 1988). In addition to the use of technology for administrative purposes, institutions are increasing the “added value” of their collection by developing digitization initiatives. Collections can be made accessible, via digital surrogates, in an enhanced format that allows searching and browsing to both traditional and new audiences via the internet (Arms, 2000; Ricky, 1988).

According to the National Library of Norway, 2012:1) “Digitalizing will help to safeguard the collections for future generation, secure saleable solutions and ensure sufficient capacity for migration and conversion of

digital content as important elements in digital archiving initiatives. Digitization, by contrast, permits quick and easy browsing of large volumes of material (Ricky, 1988). Macquail, (2000:28) identifies the process of digitalization as having immense significance to computing ideals as it “allows information of all kinds in all formats to be carried with the same efficiency and also intermingled”. Digicult (2003) argues that digitization contributes to the conservation and preservation of heritage and scientific resources; it creates new educational opportunities, it can be used to encounter tourism, and it provides ways of improving access by the citizen to their patrimony (Digicult 2003).

The UK Council on Library and Information Sources (2008) recognized the key benefits of digitization to include:

- The creation of new finding aids links to bibliographic records and development of metadata will enhance intellectual control of collections.
- Ability to search, discover and manipulate images, text and sound in new contexts will increase and extend use of collections.
- Wider disseminating of unique collections will encourage scholarly use.
- Digital surrogate swill help preserve unique objects by protecting them from handling
- Digitalization will allow integration of related materials on multiple texts in virtual collections.

Smith and Nicholas (2001) argued that digitization of cultural heritage materials is changing the ways in which collections are used and accessed. They stated that many materials are amendable to digitization, including scarce, fragile and ephemeral materials, as well as the whole spectrum of moving image and audio materials. All can be safely used by a wider audience in digital form. Research and interrogative tools for digitized source materials can also make digital surrogate more amendable to certain types of interpretation, such as full text searching and indexing as well as comparison of materials for multiple sources, valuable digital resources will bring prestige to institutions that create and maintain them (Smith and Nicholas 2001).

The reviewed literature further indicated that the primary advantage of digital preservation is enabling greater access to collections of all types and formats. Hughes (2004) concurs that conversion into bits and bytes opens up a completely new dimension of reaching both traditional and new audiences by providing access to cultural heritage resource in ways unimaginable a decade ago. Jones (2001) highlighted the advantages of digital access to collection to include the following:

- Increased use of collections, facilitate learning and scholarship.
- Electronically enhanced images can be viewed with greater legibility
- Viewers can search for information faster and independently
- Easy to be viewed anytime, anywhere
- Can be readily printed from the web

Disadvantages of Digitization

Smith (1999) asserted that digitization often raises expectations of cost, reductions and efficiencies that can be illusory, and if not viewed realistically, have the potential to put at risk the collections and service libraries have provided for decades. He was of the opinion that digital conversion replacing microfilming as the preferred medium for preservation reformatting could result in irreversible loses of information. Moreover, the reviewed literature indicates that more information and sampling more frequently makes digitizing more

expensive. It takes longer to gather and transit more complete information and it costs more to store it. Fortunately, the stunning rise in computer power, the equally stunning drop in the cost of digital storage and the significant increase in the speed of computer network have made these costs much less daunting than before. But even in the best of circumstances, the move from analog to digital generally entails a loss of information although the significance of that loss is the subject of continuing and sometimes acrimonious debate.

McQuail, (2000:28) and Puglia (2003) observed that the shift to digitization in the contemporary media world has created implications for the traditional mass media products. According to McQuail (2000: 28), “limitations to Digital Preservation are still very unclear”. The more technology advances, the more converged the realm of mass media will become with less need for traditional communication technologies. McQuail, (2000), observed that the internet has transformed many communication norms, creating more efficiency for not only individuals but also for business. Lee (2001) on the other hand doubted if digitization is really worth it. He noted that if taken an item that was a lot cheaper to capture would be in much greater demand then quite quickly the balance shifts back. Digitization brings the hidden results of new equipment and raised skills. On the other hand though, it is undoubtedly, true that many of the digitization projects that have been undertaken so far do concentrate on rare or unique items of undoubted aesthetic value, but outside of a few subjects, they have little consequences to most readers. The question is: could this money have been better spent elsewhere.

Jones (2001) observed that digital projects are very expensive and that institutions have managed to make digitization projects cost effective. Jones (2001) further observed that despite the high costs of digital conversion it is a near certainty that digital importance will increase exponentially in the future. Patrons are already requesting high quality digital images from cultural heritage institutions and this demand will only increase as time goes on.

Theoretical Framework for Digital Preservation

According to Moore et al (2007), a theory of preservation extends the concept of digital preservation from one that is focused on sending the records (meta data into the future to one that can also send into the future a description of the environment that is being used to manage and read the records. He further stated that the true test of a preservation environment is whether it describes the entire preservation information context sufficiently well that the records can be migrated into an independent preservation environment without loss of authenticity or integrity. Moore (2008) proposed a theory of preservation which makes assertions about the ability to maintain the information context, arrangement, and management of records, as well as the information context of the preservation environment. He further argued that since no system can be completely self-describing, the theory of preservation needs to define the minimal set of assumptions on which preservation environments are based, and then show how these assumptions are conserved as the preservation environment evolves (Moore, 2008). For viable records preservation processes, Moore (2008) observed that reversible transformations are expedient. Such ability to transform back to the original records involves, characterizing records as follows:

- a. Every record is a sequence of bits
- b. Information content is described by defining the structures present in the bit sequence, and then naming the structures. The structure names represent the semantic terms used to define the meaning of the record.

c. Knowledge content is defined as relationships between and on the structures. Examples include:

- Logical relationships. The semantic term can be mapped into an ontology, and reasoning done on inferred attributes (semantic grid).
- Temporal relationships. The structure may represent a time stamp that may be used to enforce causality.
- Spatial relationships. The structure may be mapped to a coordinate system that can be mapped in turn to geometry and displayed in a GIS system.
- Procedural relationships. The structure may represent the outcome of a process in a workflow such as the application of a preservation process.
- Functional relationships. The structure may require the application of a transformation algorithm for creating derived data

The components of Moore (2008)'s proposed theory are:

Characterization

- Definition of the persistent name spaces
- Definition of the standard operations that are performed upon the persistent name spaces
- Characterization of the changes to the persistent state information (associated with each persistent name space) that occur for each standard operation
- Characterization of the transformations that are made to the records on each standard operation

Completeness

- Demonstration that the set of preservation processes is complete, enabling the decomposition of every preservation process onto sets of micro-services that execute standard operations
- Demonstration that the preservation management policies are complete, enabling the control of all preservation processes
- Demonstration that the persistent state information is complete, enabling the validation of all assessment criteria

Assertion

- If the operations are reversible, then a future preservation environment can recreate a record in its original form, maintain authenticity and integrity, support access, and display the record
- A corollary is that such a system would allow records to be migrated between independent implementations of preservation environments, while maintaining authenticity and integrity.

Beagrie and Greenstein (1998), asserted that a realistic/practical framework should emphasize the 'three main stages (creation, management / preservation, and use) in the life cycle of a resource, the role and functions of different generic stakeholders within this, and the inter-relationships between each stage and the implications for preservation of those resources with long-term cultural and intellectual value'. The life cycle of the resource is also heavily influenced by the legal and business environment, therefore, the influence of these factors and how they may shape the creation, management, and use of the resource must be considered in a preservation framework (Beagrie and Greenstein 1998).

The surveyed literature indicated that the Preservation of Digital Materials is based on general theories and models developed for the management of records generally. This section is limited to the review of literature relating to the Open Archival Information Systems Reference models also known as OASIS, and the records continuum theory.

The Open Archival Information Systems Reference Model

This is an abstract model for digital archiving. This model was developed by the Consultative Committee on Space Data Systems as a framework for designing repositories capable of storing and managing collected and archived data and has been used by many digital libraries as a framework for defining digital archiving functions (Hedstrom, 2002). According to Vander Werf-Davelaar (1999), the OASIS model offers a conceptual framework that enables communications with partner institutions and other libraries having depository systems for electronic publications. The OASIS model defines the environment necessary to support digital repository and the interactions within that environment. Data within the OASIS reference Model is contained in a series of information packages namely: a Submission Information Package (SIP), an Archival Information Package (AIP) most relevant for purposes of perseverance is the Archival Information Package (AIP) and dissemination information package. This contains the information which is the focus of preservation, along with any metadata required to support the OASIS services.

Hedstrom (2002) argues that OASIS model meets the following requirements:

- a. The model is a high-level description of the environment for an OASIS, the types of information that an OASIS could handle and the functions that are necessary to maintain an OASIS.
- b. It operates where there are client systems that create data to be archived, management that sets overall policy for the OASIS and consumers (people or client systems) that interact with the OASIS to find and acquire preserved information.
- c. It contains a number of information objects (called packages) that consist of content information, preservation descriptive information, packaging information, and descriptive information.
- d. It defines three types of information packages: a Submission Information Package (SIP) that is supplied to the OASIS by the producer, and Archival Information Package (AIP) that has all of the qualities needed for permanent or long-term preservation of an information object, and a Dissemination Information Package (DIP) that is distributed to a consumer upon request.
- e) The high-level functions of the OASIS include ingest (acquiring SIP's and preparing them for archival storage), archival storage, data management, administration, and access.

Listed below are some key reasons why the OASIS model is so helpful to the digital preservation process and community (Feenstra, 2000):

- It has standardized the terminology associated with digital preservation
- It has outlined the duties and services of a preservation repository
- It has outlined a way that information should be attributed and managed within a repository
- It has mobilized community discussions about repository standards and certification
- It has included preservation metadata as an important part of the preservation process

- It focuses on long-term preservation, but let's "long-term" be defined by the repository managers
- OAIS-type archives are committed to a set of defined responsibilities

Challenges Affecting Digital Preservation

The benefits of the digital media in the presentation and preservation of records and other materials have been well-recognized over the years. Vast quantities of materials in digital forms, including emails, social networking websites, blogs, and so on now exist with remarkable ease of creating and updating content. Incidentally, preservation of digital materials continues to face a number of economic, institutional, and technical challenges. First, while traditional analogue information such as print materials are easily accessed without any mediation, digital materials must only be accessed via software. Unfortunately, the software environment is quite unstable thereby influencing continuous access to digital materials (Becker et al, 2009). Furthermore, the hardware, physical storage media, data formats, and indeed the software could also become obsolete with time, thereby inhibiting the survival of the digital material (Evans and Carter, 2008). Secondly, the dynamic and complex nature of digital materials also poses worrisome challenges to preservation efforts. Maintaining the authenticity and integrity of materials such as interactive web pages, virtual reality and gaming environments, learning objects, and social media sites in a constantly changing technological environment becomes cumbersome (Arora, 2009).

Thirdly, another well-recognized challenge of preservation of digital content relates to the issue of scale. The amount of digital information being created along with the "proliferation of format types" presents a great challenge to the creation of trusted digital repositories having adequate and sustainable resources (Day, 2006).

Fourthly, the economic challenges of preservation of digital are by no means trivial. Preservation initiatives need considerable upfront investment as well as numerous recurrent costs for data ingest, data management, data storage, and staffing (BRTFSDPA, 2010).

Finally, UNESCO/ UBC (2012) recognized some key factors affecting digitization of analogue material and the long term preservation of digital contents as thus:-

- 1) Digitization can support this right by access to knowledge. Large scale digitization projects around the globe have contributed to the availability of multilingual and culturally diverse content. Digitization, while not in itself a major means of preservation can protect invaluable documents from handling and further deterioration. For some materials it is the only means of survival.
- 2) Preservation policies are not keeping pace with technological development and social evolution. Training in managing digital records will reposition professionals to implement practices relevant to governmental and citizen's needs.
- 3) A better understanding of the digital environment including the need for legal rights management is essential for the establishment of digital preservation models that close the existing gaps in institutional regulatory framework and balance access with privacy and due consideration of for ownership and control of indigenous cultural heritage and traditions.

- 4) Lack of awareness of issues and the costs of failure will have significant impact on social and economic development. Digital preservation should be a development priority therefore investments in infrastructure are important but they need to be supported by similar investments for the preservation of records and further long – term accessibility.

Digital Preservation in Africa

Literature on digital preservation is extremely rich and by no means exhaustive in the developing countries. A UNESCO study on digital heritage in three countries South Africa Ethiopia and Botswana by Tembo, Zulu, and Kalusopa, (2006), revealed the following challenges in digital preservation in Africa:

1. Lack of a national policy framework on digital material preservation;
2. Relevant legislation on ICTs, especially on digital material preservation, is yet to be drawn and enacted;
3. Lack of clearly defined national heritage institution(s) responsible for digital material preservation;
4. Absence of coordinated national initiatives and programmes on digitization;
5. Gaps in the necessary human resource requirements, in terms of knowledge skills and competencies to drive digital material preservation in heritage institutions;
6. Lack of standards in digital material preservation, terms of hardware, software, storage media and metadata;
7. Haphazard approach to digital material preservation in most heritage institutions;
8. Absence of local institution that could serve as models for “best practices” (or centre of excellence) in digital material preservation;
9. The management of indigenous knowledge systems, in terms of their digitization, remains to be addressed; and
10. Disaster planning and recovery in most heritage organizations remains to be addressed.

Kalusopa, (2009) and Zulu (2009) examined the state of digital heritage preservation in Botswana. The study focused on the state of digital material preservation in Africa involving Botswana, Ethiopia and South Africa. The utilized the survey method, document research, observation, field work and the holding of a National Consultative seminar as a data input tool. The findings of the study showed that the country, just like any other developing nation, lacks policy formulation on digitalization both at the national and institutional levels, ill-defined national digitization coordination for digitization activities at institutional and regional levels, dearth of human resources for digitization amongst others. The study recommended that appropriate measures should be put in place in implementing adequate digital material preservation programmes for the survival of its heritage materials.

Several initiatives are ongoing in which archival holdings from the African region are being copied. A great deal of these initiatives is very often donor driven with the promise that at the end of the project, the equipment used to digitize the materials will be donated to the country holding the original archives and while the donor agency is provided with a copy of the digitized collection. A summary of some the digitization projects that have been carried out in Africa was provided by Tsebe (2005). An examination of the digitization projects undertaken indicates that most of these projects were based in national Libraries and as well as in academic rather than in archival centers.

A few examples of digitization project using archival materials include the digitization project of Zambian archival materials which was undertaken due to the following reasons:

1. To increase access
2. To improve services to an expanding group of users by providing enhanced access to the institution's resources
3. To reduce the handling and use of fragile and heavily used original materials
4. To give the institution opportunities for the development of its technical infrastructure and staff skills capacity
5. To take advantage of financial opportunities, for example the likelihood of securing funding to implement a program, or of a particular project being able to generate a significant income. (Hamooya and Njobvu (2010:240)

Another project worth mentioning is the ALUKA project. Ryan (2010:3), argues that through the Aluka project:

One of the more interesting aspects of Aluka's work has been the development of digital labs in Sub-Saharan Africa. Many African institutions contain rich archival resources that are largely unknown to outside scholars. These institutions are eager to use digital technologies to make their resources more widely available, but have limited resources to do so. In Africa, Aluka provides these institutions with equipment, training, and technical support for digitizing materials in their collections. Because of these labs, content does not have to be shipped off-site to overseas vendors where precious materials can be lost or taken out of circulation for lengthy periods of time. Aluka has established approximately 30 digital labs in Eastern, Western, and Southern Africa for the digitization of content.

Britz and Lor (2004:218) raised five questions which ought to be borne in mind when undertaking digitization programmes originating from outside the continent. These questions are:

- (a) Who has access to the information? For example will African scholars be able to access this information free of charge?
- (b) What control will the originating community have over their information once others have digitized it?

- (c) Will originating communities be identified as the original creators of their cultural heritage and will they have the right to control access and non-disclosure of certain categories of their heritage for example sacred knowledge artifacts
- (d) To what extent will the global rules on intellectual property be able to protect the common heritage of Africa and prevent it from becoming exclusive private property? Will the international intellectual property regimes be able to maintain the balance between private ownership and common heritage of the people of Africa?
- (e) Will the people of Africa be fairly compensated for the use of their knowledge by others and what incentives will there be for them to make their body of knowledge available to the rest of the world?

The Way Forward for the African Heritage Institution

From literature reviewed, it was noted that there must be active intervention to make sure that the digital objects stored in storage media can be located, accessed and used over long-term period more so; materials are digitized without print copies. Digital Preservation policy and institutional framework for Digital preservation are not in existence. Significant efforts are needed to be put in place so that Africa would not gradually begin to lose materials of great value. The question now is: which is the way forward in salvaging Africa heritage materials and to ensure global accessibility of information resources? Alegbeleiyi (2009) remarked that: "There is actually no salvation in doing nothing. Electronic Information will be preserved and useable in the future only if possible action is taken on a current basis." Rosenthal et al (2005) and Gladney (2007: 2) also conceived that digital objects will cease to be accessible without active management and intervention. Masakazi (2009) opined that in the present information society, every nation has to ensure the preservation, promotion and dissemination of its arts, culture and the overall heritage using the tools in the present age. He further stressed that heritage is a source of strength and confidence that puts the changes of the society into perspectives and therefore enable the society to build a better future Masakazi (2009). The pertinent question is thus: Which is the way forward for the African heritage institution?

National policies on digital material preservation should be formulated. As observed by the Electronic Resource Preservation and Access Network (ERPANET) 2003, a policy forms the pillar of programmes for digital preservation. This is because it gives general direction for the whole organization. Furthermore, the lack of policy results in lack of co-ordination in digital activities at institutional and national levels. Among the objectives of the national digital material preservation policy will be to:

- Identify institution(s) that will be responsible for driving digitization;
- Create initiatives at national, regional, as well as international levels;
- Stipulate the preservation and accessibility of digital materials;
- Ensure the authenticity of preserved digital materials; and
- Stipulate national digitization standards in terms of hardware, software, processes and procedures to ensure compatibility and easy migration of digital materials.

Previous Studies on Digital Preservation in Africa

Abiola (2007) in a study on fifty years of archives administration in Nigeria highlighted the problems that bedeviled Archival institutions and record management in the country. The study indicated the factors that contributed to deterioration of Archives in Nigeria were poor finding, lack of appreciation of the importance

of Archival repositories, obsolete equipment and low staff turnover. The studies recommended modern conservation equipment and facilities to meet the challenges of modern conservation programme, conservation and repair workshop must be resuscitated and invigorated, he stressed the need for digitization programme not only to salvage endangered Archives but also to promote wider access to information, record materials and digital materials. Daramola, and Ibe (2010) Accessed the high rate of environmental deterioration in Nigeria urban cities. The studies identified various environmental problems in Nigeria and their implication for sustainable development in the country. Relying on archival records and observations, the paper suggested the application of planning, economic, legal, institutional as well as educational tools in addressing the situation of environmental deterioration of material and digital resources.

Gbaje (2011) conducted a study on Digital Preservation strategies at the Nigerian National Library, Nigerian Bureau of statistics and the Nigerian National Archives of Nigeria. The study discovered among others that migration is the most popular Digital Preservation strategy adopted and no structure to access digital objects for preservation action is in place. Various recommendations were given including current digital preservation procedures. Ngulube, (2005) carried out a research on environmental monitoring and control at National Archives and Libraries in Eastern and Southern Africa. His study stressed the importance of accessibility to materials in National Archives and Libraries, and the preventive measures needed to protect material holdings into the future. He recommended environmental control and monitoring as a key to management strategies in Archives/ Libraries including digital preservation. Kalusopa and Zulu (2009) described the features of a framework for digital preservation in Africa as follows:

- National policy on digital material preservation should be backed by relevant legislation. Legislation is important because it provides the legal framework, and stipulates the specific responsibility on the management and preservation of digital materials.
- National institution should come up with co-ordinate digital material preservation initiatives or programmes. Among objectives of such initiatives would be to:
- Raise national awareness and advocacy on digital material preservation. This should be done at various levels: strategic, technical as well as end-user levels:
- Promoter research on digital material preservation;
 - Spearhead training in digital material preservation;
 - Create national database on digitization;
 - Document indigenous knowledge systems and oral history; and
 - Provide technical assistance to institutions on the selection and retention of digital materials.
 - National heritage institution in African and other stakeholders should address the human resource gaps in digital material preservation by recruiting, developing (through various short-term and long term training strategies) and putting measures in place for the retention of personnel.
 - African Heritage Institutions should develop centre of excellence on digital preservation. Among the functions of such centre would be:
 - Developing of standards in hardware, software, as well as metadata.
 - Research in digital material preservation.
 - Adaptation and testing of digital technologies
 - National Heritage institution should put in place strategies for disaster planning, mitigation and recovery of digital materials in their holdings.

Conclusion /Recommendation

This paper has presented reviewed literature on the preservation of digital preservation. Recommendations are hereby proffered to enhance the smooth running of digital preservation in Heritage Institutions. Training of archivist in the technical knowhow of digital preservation strategies has been advocated for, competencies and technical skills in metadata, checking and verifying of the digitized resources for quality control and selection of hard and software. Much of the world's cultural and historical significant collections are bound by the need for more funding for the development of tools and resources. Heritage institutions are not given appropriate funding to get to grips with the issue of digitization. Certainly heritage institutions are going to need a greater injection of funding if they are to avert the loss of significant resources. There needs to be well accepted guidelines and standard for digitizing works with regards to cultural heritage institutions. Furthermore, there should be guidance and advice on specific work related to the preservation of digital materials which could be needed over long term. Finally, the establishment of a National Centre for Digital Preservation which shall be responsible for monitoring, reviewing and conducting research of the National Digital Preservation Policy to reflect current best practices and technology trends.

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Government Accounting and Budgeting System's Effectiveness and Efficiency in Business: A Case of Botswana

Mfolo Mfolo and Batlang Comma Serema

Abstract

Information systems assist organisations achieve greater efficiency by automating parts of processes and therefore they have become of age in the contemporary world to maximise business gains and achieve competitive advantage. One such information system is the finance and accounting system which its core functions includes among many others general ledger, budgetary accounting, accounts payable and accounts receivable. This study investigates the effectiveness and efficiency of GABS as financial and accounting system. The results should assists government establish the competence of GABS in business processes. The results indicate that GABS is a friendly financial and accounting information system to use moreover very proficient in controlling fraud. On the contrary GABS dependability on the internet might affect its suitability in business more especially when the internet bandwidth is limited.

Keywords: Information system, Financial Information Management System, Government Accounting and Budgeting System, Competitive advantage

Introduction

Today's fast paced world is becoming increasingly characterized by technology facilitated transactions. These transactions take place in well designed and automated systems. Against this background the author cannot categorically conclude that extensive research has been carried out to analyze the effective and efficiency of Government Accounting and Budgeting System (GABS) as an information system. It is on this note that this paper is formulated to close that gap.

Growing number of companies have adopted these information systems to increase efficiency in their work programs and moreover embrace the e-world. Davis (2006, p12) declare that in organizations, the term Information System (IS) or some equivalent label refers to both the systems that deliver information and communication services to an organization and the organization function that plans, develops, operates, and manages the information systems. An organization that endeavors to gain competitive advantage over its competitors would adopt information systems that support their business strategy and hence maintain efficient operations in the organizations. Al-Mamary, Shamsuddin, Aziati (2014, p333-334) further substantiates that:

Every business organization in this era needs an information system (IS) to keep track of all business activities, right from business planning, till the product delivery via manufacturing and quality cycles. An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making, coordination and control in an organization. In addition to supporting decision making, coordination, and control, information systems may also help managers and workers analyse problems, visualize complex subjects, and create new products

It is increasingly evident that information systems will continue to be a critical component of organizations and organizations are expected to embrace them for their long term business success. The main purpose of this study is to investigate the Government Accounting Budgeting System (GABS) and analyze its effectiveness and efficiency in business processes. Through a quantitative and qualitative research method, GABS users will be investigated to ascertain the GABS competence and their level of satisfaction as they make use of GABS. Different theories and models as part of the literature review are used to integrate and synchronize the information system and the approaches and examine how they apply in modern day technology.

The paper has four parts. First, it reviews the extent of literature relevant to information systems. Then the research methodology is presented and data analysis techniques are presented. Next the findings are discussed and summarized. The paper concludes with a discussion of business adopting information systems and directions for future research.

Objectives

The central objectives of this paper are:

1. To establish the efficiency of GABS in the business
2. To investigate the attitude of users towards GABS
3. To explore GABS suitability in information system management

Literature Review

Information Systems

Melville et al. 2004 in Venkatesh, Brown, Maruping and Bala (2008, 483-484) present the idea that information systems continue to play a vital role in organizational life. Investment in, and implementation of, enterprise level systems, such as enterprise resource planning (ERP) systems, supply chain management systems, customer relationship management (CRM) systems, and business intelligence systems, have become the hallmark of organizational strategies for survival and competitive advantage. On another submission Day 1994 and Glazer 1991 in Venkatesh, Brown, Maruping and Bala (2008, 484) confer that information systems have long been thought to aid firms in a host of customer intelligence tasks and response activities, from collecting detailed data on purchase habits and disseminating that data across functions to analysing critical market trends and developing actionable marketing plans. Al-Mamary, Shamsuddin, and Aziati (2014, p338) affirm that:

There are different types of information systems used in business organizations. Transaction processing systems designed to records the daily routine transactions necessary to the conduct of the business. Office automation systems designed to support office tasks. Process control systems designed to Monitor and control industrial or physical processes. Management information system (MIS) basically concerned with converting data from internal sources into information which is then communicated to managers at all the levels, in all functions to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible. Decision support systems designed to help manager in decision making that needs modelling, formulation, calculating, comparing, selecting the best option or predicts the scenarios. Executive information systems provide senior managers with a system to assist

in taking strategic and tactical decisions. Expert system program designed to emulate human reasoning.

This study attempts to clarify the role of finance and accounting information systems in business organizations.

Finance and Accounting Information Systems

Diamond and Khemani (2006, p99) emphasize that financial management information systems (FMIS) usually refers to computerisation of public expenditure management processes including budget formulation, budget execution, and accounting with the help of a fully integrated system for financial management of the line ministries and other spending agencies. Furthermore Diamond and Khemani announce that in most developing countries, budget execution and accounting processes were/are either manual or supported by very old and inadequately maintained software applications. This has had deleterious effects on the functioning of their public expenditure management (PEM) systems that are often not adequately appreciated. As a result in light of these adverse developments, it is perhaps not surprising that many developing countries have pressed for, or have been pressed into, adopting (FMIS) projects to strengthen their PEM systems.

Al-Mamary, Shamsuddin, Aziati (2014, p337) noted that finance function is responsible for managing the firm's financial assets, such as cash, stock, bonds, other investment. The accounting function is responsible for maintaining and managing the firm's financial records such as receipts, depreciation, payroll etc. According to Shim the fundamental task of accounting software is to automate the routine chore of entering and posting accounting transactions. This information is organized in an electronic format so as to produce financial statements and can be accessed immediately to assist in the management of the firm.

A financial management information system provides financial information to all financial managers within an organization. Financial decisions are typically based on information generated from the accounting system.

Economic theories

Urgency theory

Mitchell, Agle, and Wood (1997, p867) state that "urgency" is defined by the Merriam-Webster Dictionary as "calling for immediate attention" or "pressing." We believe that urgency, with synonyms including "compelling," "driving," and "imperative," exists only when two conditions are met: (1) when a relationship or claim is of a time-sensitive nature and (2) when that relationship or claim is important or critical to the stakeholder. Thus, similar to Jones' (1993) description of moral intensity as a multidimensional construct, we argue that urgency is based on the following two attributes: (1) time sensitivity-the degree to which managerial delay in attending to the claim or relationship is unacceptable to the stakeholder, and (2) criticality-the importance of the claim or the relationship to the stakeholder. We define urgency as the degree to which stakeholder claims call for immediate attention

Behavioural theory

Gino and Pisano (2007, p11) emphasize that specifically, behavioural operations focuses on how cognitive and behavioural factors shape the way operating systems and processes work and perform and on the normative implications for the design, management, and improvement of these systems and processes. In behavioural operations, the performance impacts of any given management intervention (e.g. a new tool, a new process,

etc.) cannot be predicted or explained without explicit reference to the underlying behavioural and cognitive factors at work in the operating system the underlying behavioural and cognitive factors at work in the operating system

Classical model

The classical model details five functions of managers which are planning, organising, commanding, coordinating and controlling. These functions were popularised by Henri Fayol as shown below.

Pitcher (2003, p18) asserts that during the planning stage Fayol proclaim that the stage manager is instrumental in the planning process, which is done in meticulous detail, including budgets, from the pre-rehearsal period right through to the end of the run.

Vliet (2011, p3) quoting from Fayol noted that an organization can only function well if it is well-organized. This means that there must be sufficient capital, staff and raw materials so that the organization can run smoothly and that it can build a good working structure. The organizational structure with a good division of functions and tasks is of crucial importance. When the number of functions increases, the organization will expand both horizontally and vertically. This requires a different type of leadership. Organizing is an important function of the five functions of management.

In addition Vliet cited that with regard to coordinating when all activities are harmonized, the organization will function better. Positive influencing of employees' behaviour is important in this. Coordination therefore aims at stimulating motivation and discipline within the group dynamics. This requires clear communication and good leadership. Only through positive employee behaviour management can the intended objectives be achieved.

Pitcher (2003, p19) in relation to controlling observed that the main sources of control in the process are the production plan, the budget and the production file. The production file is crucial and it requires everything to be documented, rather like a structured methodology in an IT project.

In conclusion it should be observed that these functions of management are still relevant to organisations today. In the contemporary world events have been overtaken by information technology and therefore it is imperative that these functions are IT infused so that problems could be solved in a creative manner.

Creighton, Arendall, and Pray (1995) and Ivancevich et al., (1997) in Holder and Rollins (2014, p2) presented the following information about functions of managers:

In current literature there are variations of the five functions, and they have often been commonly combined into four functions:

1. Planning. ...managers should (a) make the best possible forecast of events that could affect the organization and (b) draw up an operating plan to guide future decisions.
2. Organizing. ...managers must determine the appropriate combination of machines, material, and humans necessary to accomplish the task.
3. Leading (Commanding). ...managers should set a good example and have direct, two-way communication with subordinates. Finally, managers must continually evaluate both the organizational structure and their subordinates, and they should not hesitate to change the structure if they consider it faulty or to fire incompetent subordinates.

4. Controlling. ...ensures that actual activities are consistent with planned activities. Fayol did not expand the idea except to state that everything should be “subject to control”.

Decision Making Model

Murty (2005, pviii) share the following sentiments about decision making:

The daily work of engineering or a business professional involves making a series of decisions. In fact, the human world runs on systems designed by engineers and business people. That's why the quality of decisions made by these two professionals is of critical importance to the health of the world we live in, and should be of great concern to every human being. These decisions are made by looking at the relevant data and making a manual judgement, usually without the help of quantitative analysis based on an appropriate mathematical model; that's why we can call this the “manual method of making decisions”.

Making decisions on issues with important consequences has become a highly complex problem due to the many competing forces under which the world is operating today, and the manual method very often leads to decisions quite far from being optimal. In fact many bad decisions are being made daily due to this. The above narration suggests that information systems are pertinent in decisions making and furthermore would add value real lead time that translates good organization. On another breadth Renna (2012, 1974) argue that the decision model operates using the information of the collaboration process and reducing the information sharing among the enterprises. Moreover Renna substantiates that enterprises need to adopt new business paradigms in order to make a rapid response to market changes and improve the competitiveness. The development of information and communication technology allows the support of new business paradigms such as extended enterprises, virtual organisations, and regional clusters.

Value Chain Model

Porter (1985) and Hooley et al, (2004) in Michail (2011, p1) declare that a firm can achieve competitive advantage if it possesses ‘capabilities’ that allow it to create not only positive value but as well additional total value than its competitors. In addition Sanchez and Heene (2004), in Michail (2011, p1) are inclined to the idea that the value chain activities are systematically interrelated and represent value creation. Therefore, a business gains competitive advantage by performing these activities either more cheaply than its competitors (low cost strategy), or in a unique way that creates superior customer value and commands a price premium (differentiation). Therefore an information system similar to GABS would fit in the value chain model since it will merge the operations, procurement, sales and marketing, human resource management into an integrated system.

Methodology

Sampling

The target population for this study consisted of Gaborone Technical College (GTC) staff members who are GABS users. Therefore already a restriction already existed with regard to the sample size. Cillers (1973, p111) in Strydom, Fouche and Delport (2007, p195) state that ‘the size of the sample will be influenced by the relative homogeneity or heterogeneity of the population and the desired degree of reliability for the purpose of the investigation’. The users consisted of authorising officers who mainly are in management, those who process payments in the accounts section and lastly the supplies officers who deal with procurement. A probability random sample approach was used to select participants in this study. Chadwick et al. (1984, p53) note that ‘in simple random sampling each individual case in the population theoretically has an equal chance of being selected for the sample’. The final realised sample was ten (10) whom a questionnaire was administered to them.

Data Collection

The questionnaire was administered to a convenience sample of ten (30) officers. No monetary incentive was attached for the respondents to complete the questionnaire but rather they were told the purpose of the study and their valuable contribution.

Measures

A ten (10) item, five point Likert scale ranging from 1 as strongly disagree and increasing with level of agreement to 5 as strongly agree was used to rate the significance of GABS to them. Narrative advantages and challenges of GABS were also included in the questionnaire to gauge the respondents’ views in relation to GABS. A pre-test questionnaire was administered to the chosen sample.

Results

Three (3) of them were males and seven (7) were female, hence totaling the number of respondents to ten, N = 10.

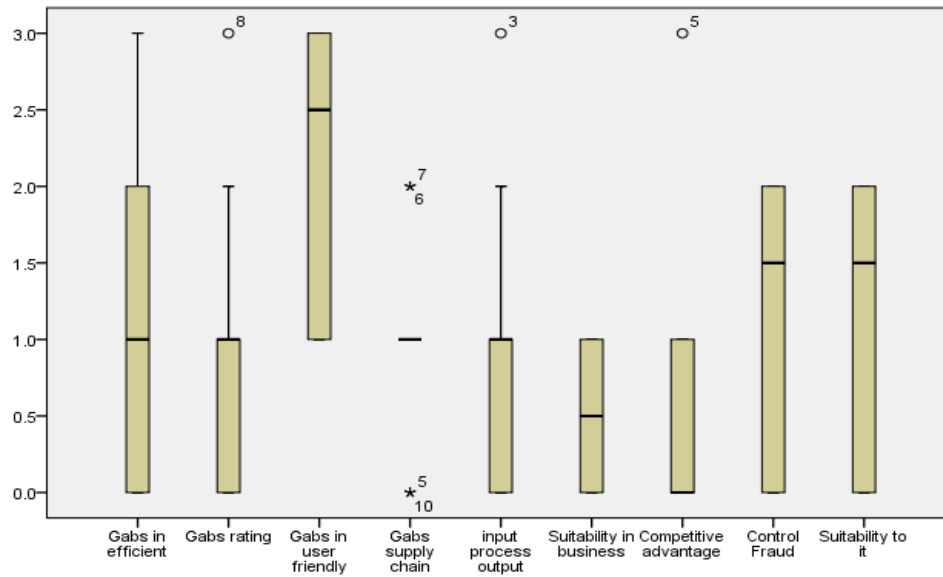


Figure 1: Distribution of scores on the rating of GABS

The sample consisted of 10 respondents. Figure 2 below shows the response of the participants on how they rated the ten item statements in the questionnaire.

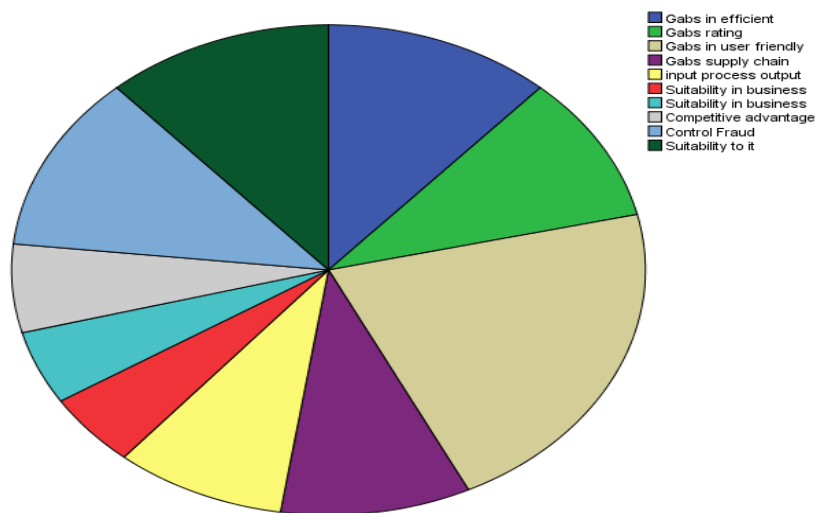


Figure 2: Respondents rating of GABS

Figure 3 below shows the results of mean scores as rated by the respondents based on the ten item statements in the questionnaire.

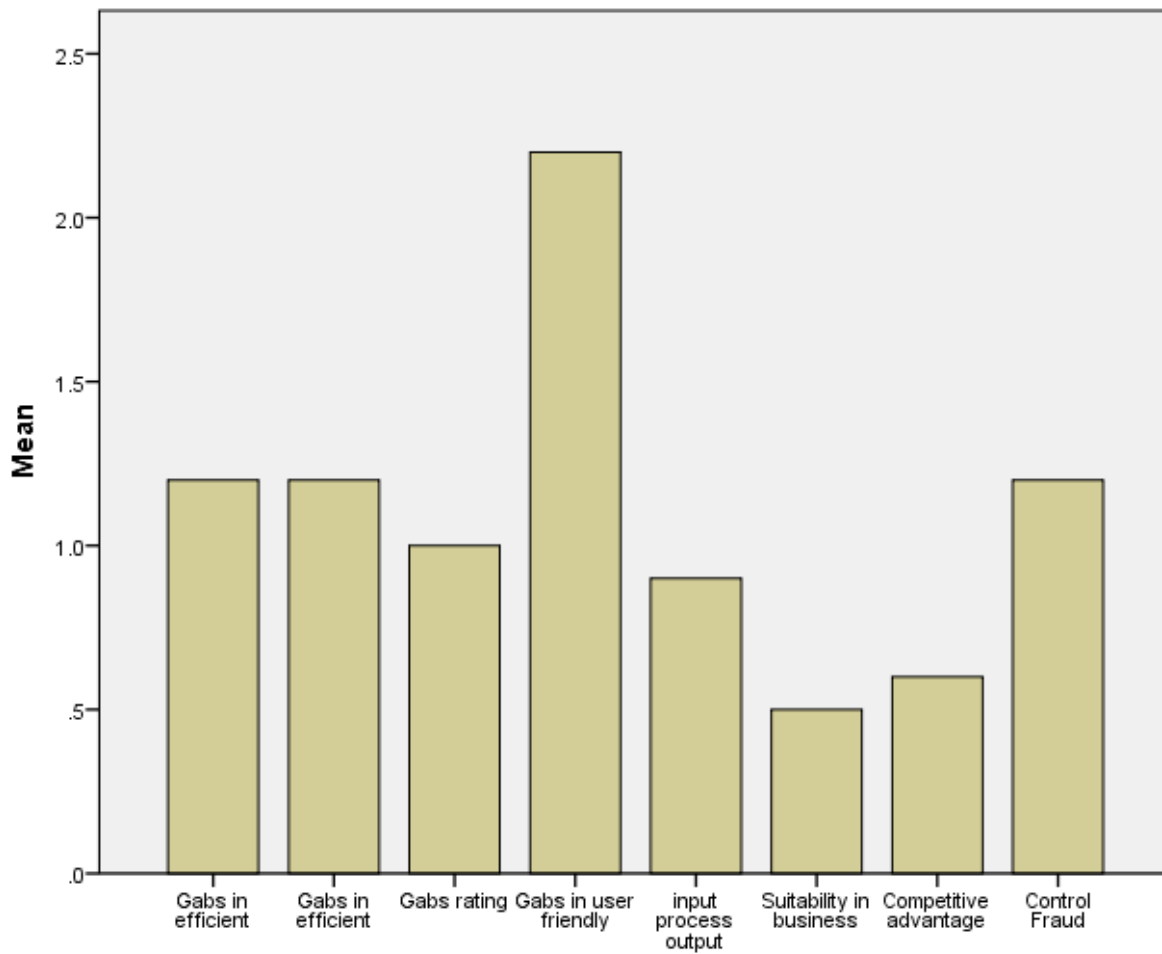


Figure 3: Respondents mean rating of GABS

Figure 4 beneath display the results of mean scores as rated by the respondents based on the ten item statements in the questionnaire.

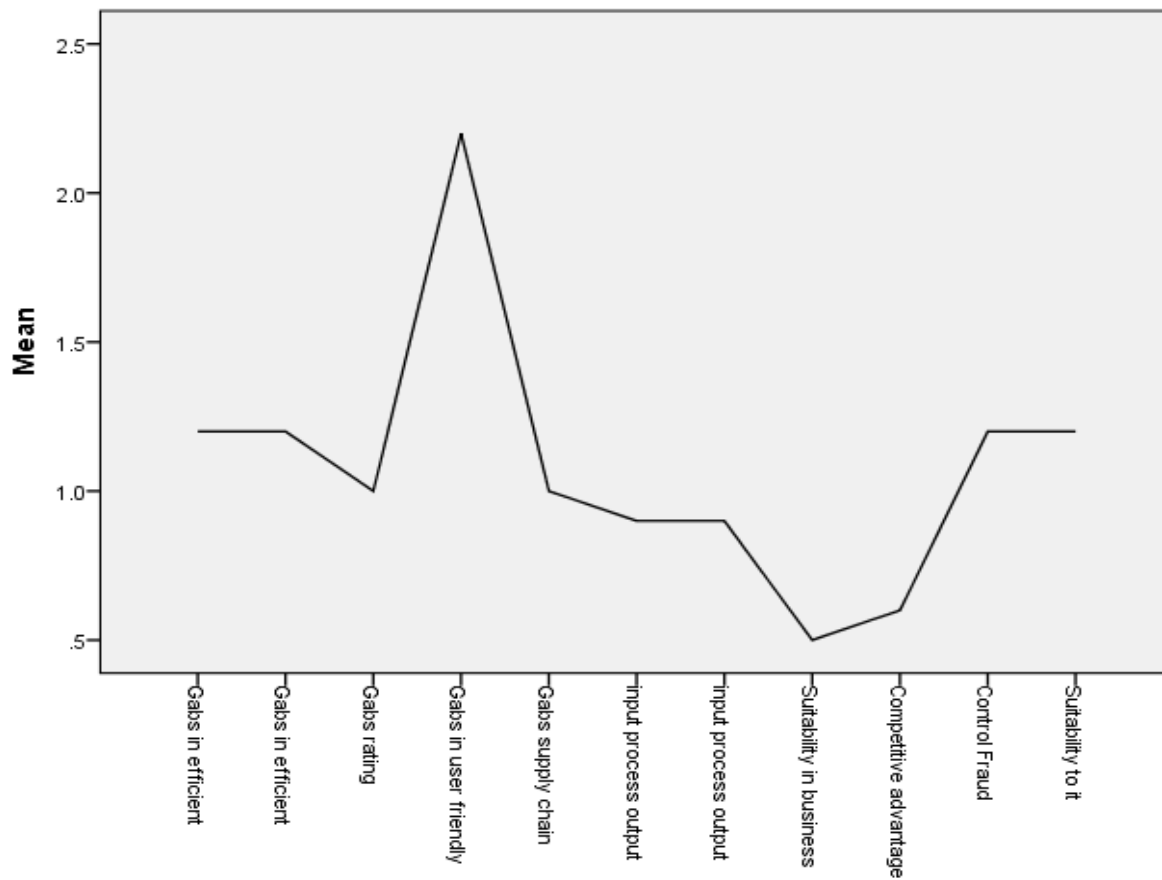


Figure 4: Respondents mean rating of GABS

Table 2: Results of an independent sample t-test for differences in the mean scores on how GABS was rated Table 2 contains results of an independent t-test for differences in the mean scores.

One-Sample Test						
	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Gabs efficiency	3.087	9	.013	1.200	.32	2.08
Gabs real time	3.354	9	.008	1.000	.33	1.67
Gabs user friendly	7.571	9	.000	2.200	1.54	2.86
Gabs supply chain	4.743	9	.001	1.000	.52	1.48
Input Process Output	2.862	9	.019	.900	.19	1.61
Suitability in business	3.000	9	.015	.500	.12	.88
Competitive advantage	1.964	9	.081	.600	-.09	1.29
Control fraud	4.129	9	.003	1.200	.54	1.86
Suitability to IT	4.129	9	.003	1.200	.54	1.86

GABS Advantages

Fast	✓	✓						
Saves time	✓	✓	✓	✓				
Reduces paper work	✓	✓	✓	✓				
Reduces fraud	✓	✓	✓	✓	✓	✓	✓	✓
Friendly	✓	✓	✓					
Reliable	✓	✓	✓					

GABS Challenges

Highly reliable on internet	✓	✓	✓	✓	✓	✓
Slow	✓	✓				

Discussions

This study investigated the efficiency of GABS as a financial and accounting information system. To this end this might be one of the few studies that have been carried out.

Summary of Findings

In general, the results indicate that GABS users value it as more friendly to use. They also consider GABS to be proficient in controlling fraud and also approve its suitability in IT. On the contrary they down play its suitability in business.

With respect to GABS efficiency the respondents in cooperation on an equal footing rate GABS as an efficient financial and accounting information system as articulated from the box plot.

On a wider perspective the participants acclaim that GABS is highly dependent on internet operation. This might suggest where the internet bandwidth is limited the 'input, process and output' operation would be compromised and hence time consumed.

Conclusions and Recommendations

The current research was only limited to GABS effectiveness and efficiency as commented by users at GTC. Future research could increase the scope of participants to include other government related departments. On another dimension the research could advocate for a comparative analysis of GABS with other financial and accounting system and establish their efficiency. One area that needs to be further explored is the reservation that the respondents perceived with regard to GABS suitability in business

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Appendix

GABS Survey

Dear Respondent

The purpose of this survey is to determine how you rate the GABS as a user.

Please indicate how important the following factors are to you when analysing the GABS:

1= **Strongly Disagree**, 5= **Strongly Agree** and 2, 3, 4 increasing levels of agreement.

1. The GABS is efficient.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2. Rate the GASB real- time operation.

Strongly Disagree				Strongly Agree
1	2	3	4	5

3. GABS is user friendly.

Strongly Disagree				Strongly Agree
1	2	3	4	5

4. GABS is useful in assisting to decision making.

Strongly Disagree				Strongly Agree
1	2	3	4	5

5. GABS support the supply chain mechanism.

Strongly Disagree				Strongly Agree
1	2	3	4	5

6. GABS entail the 'input, process and output functions'.

Strongly Disagree				Strongly Agree
1	2	3	4	5

7. GABS suitability in business.

Strongly Disagree				Strongly Agree
1	2	3	4	5

8. GABS competitive advantage in business.

Strongly Disagree				Strongly Agree
1	2	3	4	5

9. GABS suitability to control fraud.

Strongly Disagree				Strongly Agree
1	2	3	4	5

10. GABS suitability to IT.

Strongly Disagree				Strongly Agree
1	2	3	4	5

Comment on the following about GABS:

Advantages:

Challenges:

Library and Information Science Undergraduate Students Perception on the Contribution of Mobile Technologies to Learning

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Abstract

The study examined the perception of LIS undergraduate students on the contribution of mobile technologies to learning. A survey approach was adopted for the study. Through a total enumerative sampling technique the entire 117 students at the Department of Library and Information Science represent the sample for the study. A self-administered questionnaire was used for the collection of data. The results demonstrate that most respondents were aware of the mobile technologies used to facilitate learning between teacher and the students. Majority of the respondents really understand what mobile technologies is all about. Greater percentage of the respondents uses the mobile technologies all the time and most of the time. Palm top, IPod and Bluetooth are the mostly used mobile technologies by the respondents. Respondents use mobile technologies for the purpose of announcement, presentation, and discussion of important and ambiguous topics. Respondents (88%) perceived mobile technologies have contributed immensely to their learning. This was buttressed with the statements such as: without the mobile technologies, it would be difficult to survive at this university and that without the mobile technologies they would be average students. Furthermore, it was indicated that through the use of mobile technologies their GPA have been improved. And moreover, use of mobile technologies access has enhanced their academic performance more than the class lectures. Part of the recommendations include the fact that a mobile technologies centre should be established if not in each department of the university, each faculty of the university should have one.

Keywords: Mobile Technology, Digital technology, emerging mobile technologies, emerging digital environment, Library and Information Science, Learning outcomes, Nigeria.

Introduction

New mobile technologies keep emerging every passing day and their impact on all aspects of human endeavour including learning and education cannot be underestimated. Mobile technologies imply technology that is portable. Examples include: laptop and notebook computers, palmtop computers or personal digital assistants, mobile phones and 'smart phones', global positioning system (GPS) devices, wireless debit/credit card payment terminals, and many more. Mobile devices can be enabled to use a variety of communications technologies such as: wireless fidelity (WiFi) - a type of wireless local area network technology, Bluetooth - connects mobile devices wirelessly', third generation' (3G), global system for mobile communications (GSM) and general packet radio service (GPRS) data services - data networking services for mobile phones, dial-up services - data networking services using modems and telephone lines virtual private networks - secure access to a private network, etc. It should be noted that Library and Information Science is one of the disciplines that embrace

the revolution brought about by ICT including mobile technologies as these are found very useful for the students in training.

Mobile technology could have a significant role to play in educational development (Banks, 2009; Banks et al, 2009; Onguko and Ngata, 2010). Researchers have also begun to focus upon mobile learning (e.g. Naismith et al, 2004), but the potential of mobile technologies such as media players (for example, the iPod), GSM, laptops and others have not been fully explored in terms of their contribution to learning particularly in the context of developing countries. From observation, the use of mobile technologies in Nigeria education is very low. But evidence from some studies have indicated that, without prior knowledge or experience of using particular mobile technologies, teachers and students could use them and bring about changes in educational outcomes (Leach, 2008; Leach et al, 2005). Nigeria is one of the emerging digital environments and as a result; it is important to determine from the perception of the students whether or not the available digital technologies are contributing to their learning. In the light of this, this paper through a survey approach examines the perception of the undergraduate students on the contribution of mobile technologies to their learning.

It is hope that the outcomes from the study will provide a framework through which the mobile technology industries will make available the newly emerged mobile technologies at cheaper rate for the benefits of learning and other activities. Similarly, the outcome will contribute to literature on the impact of mobile technology on learning and other human activities from the population of the Nigeria LIS undergraduate students thereby making data available on the subject matter.

Literature review

A recent Library Technology Report by the American Library Association (ALA) reports that “over 115 million smart devices have shipped” worldwide in 2007 alone (ALA, 2008). McCullough (2003) describes the possibilities and problems about the real world applications of mobile handheld computing potential. Rockman (2003:26), comments on the advantages of a laptop classroom. He states that, there is much more independent learning since students now have access to powerful tools for accomplishing it. As independent learners, they also have to take on more responsibility for their learning. Students working independently have to monitor their own progress, identify the tools and resources they need to use, and know when to seek help. Not all students do equally well in this context, but many will surprise their teachers with their improved performance. Because there is much more project-based teaching, students are also more likely to collaborate, working with one another to accomplish a common goal. With project-based teaching come presentations, so students are mastering presentation software and are getting regular practice in standing before their peers and teachers to inform and enlighten them. One of the main benefits of mobile technologies is personalization. Individualized content can be accessed and used on personal devices, at any time and in any place. Students can easily and seamlessly continue learning activities outside of class (Crawford, 2007).

Networked mobile devices in the classroom enable the *instrumentation* of teaching and learning processes in the classroom. With such technology supports, information and feedback can be available *during* classroom learning activities, greatly enhancing the effectiveness of the teacher and the productivity of students’ learning time (Crawford, 2007).

Imagine students interacting with digital content using their personal, mobile computing devices, for example, in completing an individual reading comprehension activity or completing a group laboratory activity. Students’ responses and other information about their interactions with learning content can be captured and processed automatically. Easy-to-use information can be presented to the teacher in real time for use in making

decisions about how to target and individualize instruction during class or to help a learner or a group of learners make course corrections during their learning activity (Crawford, 2007).

As there are great potentials associated with mobile technologies in terms of enhancing learning, it does also have some drawbacks. There are costs involved in setting up the equipment and training required to make use of mobile devices. Mobile IT devices can expose valuable data to unauthorised people if the proper precautions are not taken to ensure that the devices, and the data they can access, are kept safe. Furthermore, in developing technology environment like the context of this study, procuring mobile technologies for students is very expensive. In our faculty for example, it is mandatory for each students to have a laptop. This is because school cannot provide them for the students.

It has been pointed out that the effective design for mobile computing in classrooms needs to take into account and optimize real-time *social* processes in the classroom (Hamilton, Lee, DiGiano, & Labine, 2005). In relation to this, (Crawford, 2007) adds that information about the interaction of individuals with each other and with content can enable the teacher to optimize these processes to improve the overall system and thereby individuals' learning outcomes. In relation learning, Cummings, Merrill and Borrelli, (2009) carried out a survey in order to better understand the nature of handheld mobile computing use by academic library users and to determine whether there is a significant demand for using the library services with these small screen devices. A survey is created to measure whether people want to access an OPAC with a small screen. Additionally, through open-ended questions, the survey attempts to gain a broader understanding of handheld mobile computing impact on, and implications for, the services provided by academic libraries. The results revealed that a total of 58.4 percent of respondents who own a web-enabled handheld device indicate that they would use small screen devices, such as PDAs or web-enabled cell phones to search a library OPAC. The increasing prevalence of handheld mobile computing devices such as PDAs and web-enabled cell phones warrants investigation as to its impact on libraries. This study examines an academic library user population and the potential demand for using the library's catalogue with handheld mobile computing devices.

According to (Crawford, 2007:5-6), integrating personal mobile technology into a classroom technology infrastructure can drastically increase a teacher's ability to create a powerful learning system in which all learners can learn better. In the light of this, he suggests that the design of the classroom technology infrastructure should take into account the full range of teachers' work flow and instructional activities. A networked technology infrastructure can: automate classroom procedures such as taking attendance, checking homework completion, creating more time for learning activity; improve teachers' workflow by automatically scoring homework, quizzes, and essays, making information available almost immediately to inform teaching and learning; generate information about student learning *in real time* by capturing and presenting information about learners' interaction with instructional materials; and provide performance support for teachers with the complex, cognitively demanding tasks of teaching, such as diagnosing students' errors and individualizing learning activity for 30 learners simultaneously.

According to St Edmund's College (2009) report, the advantages of mobile technologies in, are very evident. At least in theory, they enable 'learning anywhere, anytime'. This is an attractive slogan and the delivery of content - text, videos, podcasts etc., through PDAs and smart phones is seductively straightforward: send out the video of the professor's lecture and the 'tyranny of distance' is overcome. Furthermore, the report claimed that "the flexibility provided by mobile technologies can be valuable as additional support and convenience to students who already structure their learning with the aid of institutional learning management systems; but more importantly it can be the best way of teaching in particular environments, for example field work and other context-based learning experiences and in particular, work-based learning" p.10. To sum up all the postulates above, it is clear that mobile technologies improve learning and teachers' activities. However, this has not been confirmed from the population of the Nigeria students.

Previous Related Studies

Research on mobile media learning reveals the potential effect of mobiles devices on informal learning practices, specifically lifelong learning and adult education applications (e.g., Bradley, Haynes, &Boyle, 2005; Fallahkhair, Pemberton, & Griffiths, 2005; Scanlon, Jones, & Waycott, 2005; Vavoula, Sharples, O'Malley, & Taylor, 2004). Moreover, Kukulska-Hulme and Pettit (2008) argue that the rising importance of informal and lifelong learning has a unique connection with the affordability of mobile technologies. Mobile media enable learners to explore knowledge and situations in their own way, in a variety of places, and often outside the time constraints of traditional classroom based teaching. This attribute of mobile media supports situated learning (Stein, 1998). Mobile media devices also increase learner motivation, provide for an interactive and engaging learning environment, facilitate control of the learning process, and emphasize its relationship with the real world (Zurita & Nussbaum, 2004).

Manochehri and Sharif (2010) uncovered the influence of recently introduced classroom technology on a student's learning attitude. Research was conducted in a Gulf Cooperation Council (GCC) region university where classroom technology was being implemented for the first time. In general, data analysis involved descriptive including mean and standard deviation, and reliability analysis (based on Cronbach's α). This was followed by bivariate correlation giving evidence of discriminant validity. As all the items were developed by the authors, exploratory factor analysis was conducted to establish their fitness for research use. Finally multiple regression analysis was carried out to test the modular pathways. The study outcome implied that use of classroom technologies, in the introduction stage, does increase with the degree of perceived and encountered ease of use and extended capacity for self-directed learning by utilizing channels that enhance communication and information flows. Therefore, the flexibility to control and manage the speed and scope of learning through technology was seen to be having a conducive and positive impact on learner attitude.

However, prior experience of ICTs did not impact the learner attitude. Finally, practical implications for the implementation of classroom technologies were provided and avenues for future research were outlined.

Samuel, Botha, Ford, Tolmay and Krause (2009) describe the design, implementation and evaluation a mobile learning technology, namely IGLOO for mobile devices. It is intended to support educators as well as students in a learning environment. The reports of the study revealed that mobile technologies significantly contribute to learning.

Economides and Grousopoulou (2008) developed questionnaire regarding the use of mobile devices and distributed to 416 students in a Greek University. There were completed 384 questionnaires. The results revealed that students use their mobiles mostly for phone calls and SMS (short message service). They also tend to use their mobiles to take photos and activate the reminder. However, they do not deal with many of the devices' operations. They use their mobiles to communicate (telephone, SMS, email) mostly with their boy/girlfriend, then with their friends. They use their mobiles mostly at home, then at the University. Also, they consider health issues as the main reason to limit the use of their mobiles. Finally, there was not a statistically significant relationship between genders and their preferences.

Duncan and Lee (2007) provided an overview of what is currently happening regarding M-Learning in tertiary institutions and look at the conclusions of these initiatives. It highlighted the challenges and issues confronting tertiary educators when planning and catering for the needs, preferences, attitudes and habits of young Generation C mobile technology users and look at the potential applications or uses of M-Learning in the tertiary context. It presented a brief description of Mobile Learning initiatives currently being trailed at Queensland University of Technology. The paper concluded with a brief examination of educational policy developments regarding M-Learning around the world and a summary of the changes facing tertiary educational settings.

Rekkedal and Dye (2007) investigated experiences from the development and testing of mobile learning integrated with the online distance education system in Norway. They suggest that better, more flexible mobile solutions are needed to serve distance learners studying online with mobile devices. Moreover, they found that courses must be developed, presented, and distributed in a manner that allow both mobile and non-mobile distance learners to participate in the same course, using the same course materials that can be accessed from standard and mobile technologies.

Attewell (2005) in a study reported that the learners were mostly enthusiastic about mobile learning and 62% reported that they felt keener to take part in future learning after trying mobile learning. Of this 62% some expressed a future preference for learning: with laptops (91%) on a PC (82%) using mobile devices (80%) with friends/people of their own age (76%) at college (54%). Just under a third of respondents (29%) were assessed by their mentors as having developed a more positive attitude towards reading after taking part in the research. 82% of respondents felt the mobile learning games could help them to improve their reading or spelling, and 78% felt these could help them improve their maths. Of the learners who reported using the collaborative mobile learning tools, 88% enjoyed using the media Board and felt that it could help people to learn and 74% felt the m Portal Page Builder had potential as a tool to help learners communicate. Analysis of the evidence collected during our research suggests that mobile learning can make a useful contribution to attracting young people to learning, maintaining their interest and supporting their learning and development.

Looking critically into the above reviewed literature, it clear that studies such as the one focus in this study has not been so much researched in Africa and precisely Nigeria. In the light of this, examining the undergraduate students' perception of the contribution of mobile technology to learning is hereby considered very necessary and important. This is assumed will serve as one of the pioneer studies in this area thereby making data and information available for the population of Nigeria students. To achieve this important objective, the following specific objectives were examined.

1. Find out the undergraduate awareness about mobile technologies.
2. Identify the use and frequency of using the mobile technology by the undergraduate students
3. Determine the perceived contribution of the mobile technology to the undergraduate students' learning.

Methodology

Method and Design: A descriptive survey design was adopted for the study. The study population from which sample was drawn consists of the Library and Information Science (LIS) undergraduate students from the Faculty of Communication and Information Sciences at the University of Ilorin, Nigeria. At the moment the total population of the students in this department stand at 117, distributed as: Year 1 = 33 students, Year 2 = 62 students and Year 3 = 22 students. There are no year 4 students as the department will be graduating her first set by the 2012.

Study Sample: A total enumerative sampling technique was embarked upon to select the entire 117 students at the Department of Library and Information Science, University of Ilorin, Nigeria. This represents the population of the study.

Instrument: A self-administered questionnaire was used for the collection of data. It is a 13 items questionnaire comprises of only closed ended items. The responses range from Yes and No, Strongly Agree to Strongly Disagree, ticking and chosen from the alternative provided (See Appendix 1).

Validity and Reliability: The validity of the instrument was confirmed by two experts whose research interest was the area of learning through technologies. Their comments and suggestions lead to the modification of the instrument before producing the final edition which was used for data collection. Through a test-retest reliability method of three weeks interval, the reliability co-efficient returned an $r = 0.78$.

Data Collection Procedure: All the 117 students were administered the questionnaire. The fact that the researchers were lecturers in department where the study was conducted made it easy for the retrieval of all the 117 copies of questionnaire administered given 100 % return rate. These were used for data analysis.

Data Analysis: Data were analyzed using percentages and frequency count. The results are hereby presented as follows.

Results

Table 1 shows data on the demographic distribution of the respondents. The results revealed that 52.1% of the respondents were male while 47.9% were female. The results also revealed that 52.9% were in year two, 28.2.4% in year 1 while 18.8% were in year 3. On the year of using mobile technologies, 59.8% indicated they have been using it for about 6 to ten years back while 40.2% indicated they have been using close to 1- 5 years back. The age of the respondents revealed that 87.2% are between the age ranges of 18-25 years while 12.8 were between the age range of 26 -30 years.

Table 1: Demographic Information

Variable	Values	Frequency (n=117)	Percentage
Gender	Male	61	52.1
	Female	56	47.9
Age (years)	18-25	102	87.2
	26-30	15	12.8
Year of study	1 st year	33	28.2
	2 nd year	62	52.9
	3 rd year	22	18.8
Experience in mobile technology use (years)	1-5	47	40.2
	6-10	70	59.8

Awareness and Use of mobile technologies

Respondents were further asked to describe mobile technologies, in order to obtain detail information about their levels of awareness of the mobile technologies. The results revealed that 64.1% indicated mobile technologies were the terms used to describe various types of cellular communication technologies. On the other hand, 22.2% indicated mobile technologies referred to cell phones and laptops. On the other hand, 3.4% indicate mobile technologies referred to laptop alone. This implies majority of the respondents really understand what mobile technologies is all about.

Table 3: Description of mobile technologies

	Frequency (N = 117)	Percent
cellular communication technologies	75	64.1
Cell phones and laptop	26	22.2
Cell Phones	12	10.3
Laptop alone	4	3.4
Total	117	100.0

The study revealed that of the 117 respondents were aware of the availability of mobile technologies and were using them as well. Table 6 revealed results about the frequency of using mobile technologies by the respondents. The results indicated that 76.9% of the respondents use mobile technologies almost all the time. The results also showed that 21.3% of the respondents use it often while 1.7% of the respondents use it occasionally. This implies that more respondents use the mobile technologies most of the time. The technologies were used for communication with lecturers and colleagues, submitting assignments, making announcements, and for making presentations. Ninety-three percent of the respondents perceived that mobile technologies are contributing to their learning. Contrarily, 6.9% of the respondents were not in support of this.

Table 4: Frequency of using mobile technologies

	Frequency (N =117)	Percent
Almost all the time	90	76.9
Often	25	21.3
Occasionally	2	1.7
Total	117	100.0

Perceived contribution of mobile technologies to academic performance

On the extent to which mobile technologies have contributed to the respondents learning, Table 5 revealed that 88% indicated to a great extent and 9.4% indicated to a little extent while 2.5% indicated to no extent. This implies that majority of the respondents perceived mobile technologies have contributed immensely to their learning.

Table 5: Perceived extent of mobile technologies contribution to respondents' learning

	Frequency (N =117)	Percent
To a great extent	103	88.0
To a little extent	11	9.4
To no extent	3	2.5
Total	117	100.0

Table 6 showed the perceived contribution of mobile technologies to the respondents learning. The results revealed that respondents strongly agree and agree that without the mobile technologies, it would be difficult to survive at this university and that without the mobile technologies they would be average students. Furthermore, it was indicated that through the use of mobile technologies have been improved their GPA, and has enhances their academic performance more than class lectures.

Table 6: Perceived contribution of mobile technologies to learning (N = 117)

Items	SA	A	NS	D	SD
Without the mobile technologies, it would be difficult to survive at this university	105 (89.7%)	10 (8.5%)	0 (0%)	1 (0.8%)	1 (0.8%)
Without the mobile technologies, it would be difficult for me to cope with the rigors of face to face method.	98 (83.7%)	14 (11.9%)	3 (2.5%)	1 (0.8%)	1 (0.8%)
The use of mobile technologies as supplementary to the learning materials given by our lecturers has improved my GPA.	106 (90.5%)	8 (6.8%)	1 (0.8%)	1 (0.8%)	1 (0.8%)
Use of mobile technologies access enhances my academic performance more than class lectures.	105 (89.7%)	12 (10.2%)	(0%)	(0%)	(0%)

Key: SA=strongly agree; A=agree; NS=not sure; D=disagree; SD=strongly disagree

Conclusion

Based on the findings of this study, it can be concluded that most respondents were aware of the mobile technologies used to facilitate learning between teacher and the students. Majority of the respondents really understand what mobile technologies is all about. Greater percentage of the respondents uses the mobile technology all the time and most of the time. Palm top, iPod and Bluetooth are the most use mobile technologies by the respondents. Respondents use mobile technologies for the purpose of announcement, presentation, and

discussion of important and ambiguous topics. Majority of the respondents (75%) perceived mobile technologies have contributed immensely to their learning. This was buttressed with the statements such as: without the mobile technologies, it would be difficult to survive at this university and that without the mobile technologies they would be average students. Furthermore, it was indicated that through the use of mobile technologies their GPA have been improved. And moreover, that use of mobile technologies access has enhances their academic performance more than the face-to-face class lectures.

Recommendations

Upon the conclusion above, it is recommended that the university should provide more encouragement to the use of mobile technologies by the teachers and the students as this has been proved to support students learning.

Some respondents about 4% indicated were unsure as to whether or not mobile technologies have contributed to the learning. This might be attributed to their inability to afford one. In the light of this, the university is called upon to aide students who cannot afford at least a mobile technology. In the alternative, a mobile technologies centre should be establish if not in each department of the university, each faculty of the university should have one.

This study only covered a minute set of respondents. That is to say those respondents were selected from only one department out of about sixty departments that made up University of Ilorin. Future research should cover more departments and include more respondents so that generalisation can be made possible.

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Appendix 1: Questionnaire on Contribution of Mobile Technologies to Learning

Dear respondents,

This questionnaire is design to capture data on how the use of mobile technologies is contributing to your learning in this university. You are requested to be as honest as you possible. There is no right or wrong answer. We will ensure that your response will be treated with strict confidence.

Bio-data Information

Gender.....

Level.....

Age.....

Years of using GSM, Laptop, etc for learning: 1-2 years ☐ 3-5 years ☐

Your age: 18- 25 years, ☐ 25-30years ☐ 31-35 years ☐

36 years + ☐

Instruction: Please respond to the following items by ticking as applicable.

1. Do you aware of mobile technologies? YES ☐ NO. ☐
2. Which of the following best describe mobile technologies
 - i. term used to describe the various types of cellular communication technology

- ii. Cell phones
 - iii. Laptop alone
 - iv. Cell phones and laptops
3. If you aware of the mobile technologies, do you use them?
 YES NO.
4. How frequent do you use mobile technologies?
- i. Almost all the time
 - ii. Most of the time
 - iii. Frequently
 - iv. Occasionally
 - v. Rarely
5. Which particular mobile technology do you use most often? Please tick from the following.
- i. Cell phone
 - ii. Laptop
 - iii. Bluetooth
 - iv. Palmtop
 - vi. IPod
6. How do you use the mobile technologies as far as learning in this university is concerned? Tick as applicable:
- i. Communicate with lecturers and colleagues
 - ii. For announcement
 - iii. Submission of assignments
 - iv. Presentation
 - v. Discussion of important and ambiguous topics.
8. Which of the following do you consider as mobile technologies? Tick as applicable.
- . laptop and notebook computers
 - i. palmtop computers or personal digital assistants
 - ii. mobile phones and 'smart phones'
 - iii. global positioning system (GPS) devices
 - iv. Wireless debit/credit card payment terminals.
 - v. Bluetooth.
7. Do mobile technologies have any contribution to your learning in this university? YES
 NO.
8. To what extent do you think mobile technologies contribute to your learning?
- To a great extent
 - To a little extent
 - To no extent

Perceived Contribution of Mobile Technologies to Students' Learning

Respond to item 10-13 by ticking from the option: Strongly Agree = SA, Agree =A, Not Sure =NS, Disagree =D and Strongly Disagree = SD.

S/N	Items	SA	A	NS	D	SD
9	Without the mobile technologies, it would be difficult to survive at this university					
10	Without the mobile technologies, I would have been an average student.					
11	The use of mobile technologies as supplementary to the learning materials given by our lecturers has improved my GPA.					
12	Use of mobile technologies access enhances my academic performance more the class lectures.					

Development of an Efficient Ontological Algorithm for Information Retrieval

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Abstract

The amount of content stored and shared on the Web and other document repositories is increasing fast and continuously. This enlargement results in well-known difficulties and problems, such as finding and properly managing all the existing amount of information. Recordable progress has been achieved in the last decade with the development of search engine technologies, which collect, store and pre-process this information to return relevant resources in response to users' needs. Nevertheless, users still need extra efforts sometimes to reach their targets, even if the retrieved information is present in the search space. The motivation for Semantic Web has been a search model which employs the use of semantics for Information Retrieval. In this paper, an efficient algorithm using full ontology for Knowledge Based (KB) to improve search over large documents stored on the web or other repositories is proposed. The approach employs ontology Knowledge Based (KB) as document repository for fast retrieval, automatic semantic indexing based on Ontology KB for both upper-level and domain specific. Also, integration of Query Expansion was employed as to unbind all constraints of original user's query for better retrieval system performance. It was concluded that the added value of semantic information retrieval over traditional keyword-based retrieval has helped to achieve better precision through query weight and better recall through semantic relations. The proposed algorithm is robust, flexible and efficient. The algorithm can be useful in digital libraries, information filtering, media search and search engines.

Keywords: Algorithm, Ontology, Informational Retrieval, Semantic, Domain Specific, Web.

Introduction

The role of searching mechanism has therefore changed from those designed for special purpose to general purpose. This is due to the increasing growth, the World Wide Web is experiencing over past few years. Unfortunately, the unstructured nature of the huge volume of information on the internet made it too difficult for users to browse through the internet and find relevant information. Different information retrieval model have been developed to help solve this problem. The most common information retrieval techniques are based on keywords, which describes the content of

information in a document. The problem with this technique is the lack of the description of semantic relationship of the list of keywords found in a document. Also keywords are index based on the number of occurrence in the document and not on the semantic relationship to the document. This made it difficult for ordinary users to get relevant information based on commonly used keyword-based techniques. Thus, the use of ontologies to overcome the limitations of keyword-based search has been put forward. This has served as one of the major motivations of the Semantic Web since its emergence in the late 90's. While there have been contributions in this direction in the last few years, most achievements so far either make partial use of the full expressive power of an ontology-based knowledge representation, or are based on Boolean retrieval models, and therefore lack an appropriate ranking model needed for scaling up to massive information sources.

In the former case, ontologies provide a shallow representation of the information space, equivalent in essence to the taxonomies and thesauri used before the Semantic Web was envisioned (Christophides et al. 2003, Guha et al. 2003, Rocha et al. 2004). Rather than an instrument for building knowledge bases, these light-weight ontologies provide controlled vocabularies for the classification of content, and rarely surpass several KBs in size. This approach has brought improvements over classic keyword-based search through query expansion based on class hierarchies and rules on relationships, or multifaceted searching and browsing. It is not clear though that these techniques alone really take advantage of the full potential of an ontological language, beyond those that could be reduced to conventional classification schemes.

Other semantic search techniques have been developed that do exploit large knowledge bases in the order of GBs or TBs consisting of thousands of ontology instances, classes and relations of arbitrary complexity (Castells 2004, Contreras et al. 2004, Norasykin & Sim 2011). These techniques typically use Boolean search models, based on an ideal view of the information space as consisting of non-ambiguous, non-redundant, formal pieces of ontological knowledge. In this view, the information retrieval problem is reduced to a data retrieval task. Edge item is either a correct or an incorrect answer to a given information request. Thus search results are assumed to be always 100% precise, and there is no notion of approximate answer to an information need. This model makes sense when the whole information corpus can be fully represented as an ontology-driven knowledge base, so that search results consist of ontology entities. However, there are limits to the extent to which knowledge can or should be formalized in this way.

First, because of the huge amount of information currently available to information systems worldwide in the form of unstructured text and media documents, converting this volume of information into formal ontological knowledge at an affordable cost is currently an unsolved problem in general.

Second, documents hold a value of their own, and are not equivalent to the sum of their pieces, no matter how well formalized and interlinked. They may be the replacement of a document by a bag of information atoms inevitably implies a loss of information value: the thread of thought behind the order of the sentences in free text, the choice of the words, etc., are a valuable, relevant, and necessary part of the conveyed message. Therefore, although it is useful to break documents down into smaller information units that can be reused and reassembled to serve different purposes, it is yet often appropriate to keep the original documents in the system.

Third, wherever ontology values carry free text, Boolean semantic search systems do a full-text search within the string values. In fact, if the string values hold long pieces of free text, a form of keyword-based search is taking place in practice beneath the ontology-based query model since, in a way, unstructured documents are hidden within ontology values, whereby the “perfect match” assumption starts to become arguable, and search results may start to grow in size. While this may be manageable and sufficient for small knowledge bases, the Boolean model does not scale properly for massive document repositories where searches typically return hundreds or thousands results. Boolean search does not provide clear ranking criteria, without which the search system may become useless if the search space is too big.

In this study, the proposed ontology-based retrieval model meant for the exploitation of full-fledged domain ontologies and knowledge bases, to support semantic search in document repositories. Also, the use of ontologies to serve as document repository for indexed keywords is considered. In contrast to Boolean semantic search systems, as envisioned in this work full documents rather than specific ontology values from a KB, are returned in response to user information needs. The search system takes advantage of both detailed instance-level knowledge available in the KB, and topic taxonomies for classification. To cope with large-scale information sources, an adaptation of the classic vector-space model is proposed (Stojanovic, 2003), suitable for an ontology-based representation, upon which a ranking algorithm is defined. The performance of the proposed model is in direct relation with the amount and quality of information within the KB it runs upon.

Literature Review

Retrieval System

The view of the semantic retrieval problem is very close to the latest proposals in Kompetenzzentrum Interoperable Metadata (KIM) (Kiryakov 2004, Michael & Ravichandran 2014). The paper also focus on automatic population and annotation of documents as it was implemented in KIM. Along with The Ada Project (TAP) (Guha et al.2003), KIM is one of the most complete proposals reported for building high-quality KBs, and automatically annotating document collections at a large scale. In latest account of progress (Kiryakov 2004), a ranking model for retrieval is hinted at but has not been developed in detail and evaluated. In fact, KIM relies on a keyword-based IR engine for this purpose (that in indexing, retrieval and ranking). TAP (Guha et al.2003) presents a view of the Semantic Web where documents and concepts are nodes alike in a semantic network, whereby the separation of contents and metadata is not as explicit as employed in this approach.

The two main problems addressed by TAP are;

- a) The development of a distributed query infrastructure for ontology data in the Semantic Web, and
- b) The presentation of query execution results, augmenting query answers with data from surrounding nodes.

These issues are complementary to the ones addressed in this paper. However the expressive power of the TAP query language is fairly limited compared to ontology query languages such as RDQL, RQL, etc. The supported search capability is limited to keyword search within the “title properties” of instances, and no ranking is provided. Mayfield and Finin (2004) combined ontology-based techniques and text-based retrieval in sequence and in a cyclic way, in a blind relevance feedback iteration. Inference over class hierarchies and rules is used for query expansion, and extension of semantic annotations of documents. Documents are annotated with RDF triples, and ontology-based queries are reduced to Boolean string search, based on matching RDF statements with wildcards, at the cost of losing expressive power for queries. The proposed algorithm shares with Mayfield et al. the idea that semantic search should be a complement of keyword based search as long as not enough ontologies and metadata are available. The inferencing is a useful tool to fill knowledge gaps and complete missing information. Semantic Portals (Maedche 2003, Castells, 2004, Contreras et al. 2004) typically provide simple search functionalities that may be better characterized as semantic data retrieval, rather than semantic information retrieval. Searches return ontology instances rather than documents, and no ranking method is provided. In some systems, links to documents that reference the instances are added in the user interface, next to each returned instance in the query answer (Contreras et al. 2004), but neither the instances, nor the documents are ranked. Maedche et al. (2004) do provide a criterion for query result ranking in the SEAL Portal, but the principles on which the method is based – a similarity measure between query results and the original KB without axioms, is not clearly justified, and no testing of the method is reported.

The ranking problem has been taken up again in (Stojanovic et al. 2003), and also (Rocha et al. 2004) proposed the expansion of query results through arbitrary ontology relations starting from the initial query answer, where the distance to the initial results is used to compute a similarity measure for ranking. This method has the advantage of allowing the user to express information needs with simpler, keyword-based queries but, from perspective, it introduces an unnecessary loss of precision, since a more accurate result expansion can be achieved by including ontology relations explicitly in a structured query. From point of view, Rocha’s techniques would be appropriate in a more browsing-oriented information seeking context. Stojanovic et al. 2004 proposed a sentence ranking scheme based on the number of times an instance appears as a term in a relation type, and the derivation tree by which a sentence is inferred. Whereas these works are concerned with ranking query answers (i.e. ontology instances), this paper is concerned with ranking the documents annotated with these answers. Since, respective techniques are applied in consecutive phases of the retrieval process, it would be interesting to experiment the integration of the query result relevance function proposed by Stojanovic et al. 2004 into document relevance measures.

Ontology

The word “ontology” comes from the Greek word *ontos*, for “being”, and *logos*, for “word”. In philosophy, it refers to the subject of existence, which means the study of being as such (Miriam 2009). Michael & Ravichandran (2014) also defined ontology as specification of a conceptualization.

An ontology is a formal, explicit specification of a shared conceptualization [2]. Looking at ontology from both formal and inform ways, it is an extremely important part of the knowledge about any domain. Ontologies have become a very popular topic, not only in AI but also in other disciplines of computing. There are as well efforts focused on developing ontologies in many other branches of science and technology. Hence ontologies are growing fast into a distinct scientific field with its own theories, formalisms and approaches (Miriam 2009). There are a number of ontology development tools that are currently available; to mention few are protégé, Oiled, OntoEdit, Ontolingua, WebODE etc. Most of the tools provide an integrated environment to build and edit ontology, check for errors and inconsistencies (using a reasoned), browse multiple ontologies, and share and reuse existing data by establishing mappings among different ontology entities.

Ontology Features

- Ontology has a richer inter-structure as it includes relations and constraints between the concepts.
- Ontologies provide a number of useful features for intelligent systems, as well as for knowledge representation in general and for the knowledge engineering process.
- Ontologies are different from such human-oriented vocabularies in that they provide logical statements that describe what the terms are, how they are related to each other, and how they can or cannot be related.
- Every ontology provides taxonomy in machine readable and process-able forms. The vocabulary and the taxonomy of ontology together provide a conceptual framework for discussion, analysis information retrieval in a domain.
- Ontologies not only identify those classes, relations, and taxonomies, but also specify them in an elaborate way, using specific ontology representation languages.
- The major purpose of ontologies is not to serve as vocabularies and taxonomies; it is knowledge sharing and reuse by the applications i.e. every ontology provide a description of the concepts and relationships that can exist in a domain and that can be shared and reused among intelligent agents and applications.

Methodology

Semantic Indexing

A new approach to automatic semantic indexing is described as follow. The model is designed to help overcome the fundamental problem of the existing system that try to match words of queries with words of document. The problem is that users want to retrieve on the basis of conceptual content, and individual words provide unreliable evidence about the conceptual topic or meaning of a document. The proposed approach tries to overcome the deficiencies of statistical indexing

without conceptual analysis by treating the unreliability of observed term-document association data with semantics.

The proposed Ontological indexing consist of: A crawling module, Analyzing module, Tokenizing, semantic concepts extraction (keywords), and appending modules. The proposed algorithm for the semantic indexing module in Information Retrieval is illustrated as follows.

Algorithm:

- Start
- Call indexing module
 - Start crawling
 - For each non-broken link in a website
 - Call Analyse module
 - Call tokenise module
 - Call Semantic concepts extraction module
 - Call Append module
 - Next link
- End

Crawling Module

The crawling module searches through the links in a website and retrieve the web pages and other text documents for indexing.

Analyse Module

The Analysis module is responsible for extracting the necessary categories of information needed in a web page. The categories of information for a web page include the title, descriptive meta-tags and the whole text-content of the webpage document.

Tokenise Module

In this module, every categories of information is broken down into tokens. The Wordnet ontology is used to assign part of speech and weight to each of the tokens generated from the document.

Semantic Concepts Extraction Module

This regenerates the literature structure of the document using the tokens. It generates it into the sentential form. The part of speech assigned to each of the tokens is used to analyse the subject and object of discuss of a sentence.

Append Module

This module is responsible for appending conceptual terms extracting from the document into the ontology KB repository.

Query Expansion

The performance of information retrieval can be improved either by making the queries more comprehensible to the documents or vice versa. The difficulties lie in the way that query terms relate to documents. A substantial body of research on Ontology-Guided Query Expansion, this reveals that ontologies may bridge the gap between query terms and documents through semantic mechanisms. Specifically, adding ontology to QE approaches was described concisely as having the consequences of “an increase in the effectiveness of retrieval and a decrease in the efficiency of text processing” in [Croft 1986].

Definition for Query Expansion: Let Q , C , K , possibly with subscripts, denote some keyword query, concept, and keyword resp., then Q is a set of keywords $\{K_1, \dots, K_i | i \geq 1\}$, whose semantics is denoted by the set of concepts $\{C_1, C_j | j \geq 1\}$, for some positive integers i, j . Query Expansion is a query reformulation technique that appends to Q a (possibly empty) set of keywords $\{K_m, \dots, K_{m+n}\}$ while retaining the semantics of Q , for some positive integers m, n .

The proposed algorithm for Query Expansion

1. Tokenised the Initial user query.
2. Remove stop words from the tokenised initial user query.
3. Select each tokenised term and use WorldNet Ontology to assign the part of speech to it terms.
4. For each term, generate their hyponyms using the WorldNet ontology.
5. Build a query relations graph encompassing all these query relations.
6. Identify subsets of queries that are strongly related among them. Each of these subsets is viewed as a concept, an entity of the world that might be related to the current query.
7. For each entity query the ontology all domain that it can be found.
8. Disambiguate to select the appropriate domain.
9. Do query expansion for the entity in the appropriate domain.
10. Use these related to query the search engine for results.

Summary and Conclusion

Query expansion method has been tested before by some researchers, demonstrating that a small improvement could be obtained in recall, but with a deterioration of the average precision. In summary, the developed algorithm can achieve the following improvements with respect to keyword-based search:

- Better recall when querying for class instances.
- Better precision by using structured semantic queries. Structured queries allow the expression of more precise information needs, leading to more accurate answers.
- Better recall by using class hierarchies and rules.
- Better precision by reducing polysemic ambiguities using instance labels and classifications of concepts and documents.

As evaluated in this paper, the degree of improvement of proposed semantic retrieval model depends on the completeness and quality of the ontology, the Knowledge Bases, and the concept labels. For the sake of robustness, the system resorts to keyword-based search when the KB returns poor results.

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Perceptions of Social Networking Sites and Antisocial Networking Behaviour of Undergraduates Students in University of Ibadan, Nigeria

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Abstract

The use of social networking sites for social interaction and information seeking is gaining increasing popularity worldwide among students in tertiary institutions. However, the perceptions of students regarding what constitute appropriate and inappropriate use of the sites differ as they demonstrate different kinds of behaviour while engaging in social networking. This chapter therefore investigated how students perceive the use of social networking sites and level of involvement in anti-social behavior when engaging in social networking. The survey was undertaken with 300 undergraduate students of the University of Ibadan as respondents. The study adopted an ex post facto design using a survey method to collect data. All participants responded to a structured questionnaire. Data collected was subjected to descriptive analysis. Result showed that Facebook and Google+ were mostly used among the social networking sites by the students. Result also showed that the perceptions of the students of the use of social networking sites were positive and this could explain why their level of involvement in online anti-social behavior was found to be very low. Recommendations were made on how students could maintain ethical standards of good behavior of online social networking.

Keywords: Perceptions, Social Networking Sites, Anti- Social Behaviour, Students.

Introduction

The evolution of Web 2.0 technologies has drastically changed communication in social landscape. Social networking sites provide opportunity for interactions with individuals, groups, and community of people sharing a common interest. According to Mohamed and Sumitha (2011), the term Web 2.0 coined by O' Reilly Media in 2004 refers to web applications, which provide for online collaboration, participation, social networking, interaction and user-generated content sharing. Virtually, every age demographic is using Online Social Networking to communicate with others (Pempek, et al, 2009), and social networking sites are gaining popularity with a record number of users in various age groups (Madden & Zickuhr, 2011). However, Jenkins et al (2006) remark that young people are especially well-poised to take full advantage of Web 2.0.

Social Networking sites could contribute significantly to social and academic attainment of University Students. Students could use the platform to share and source for information. Research has shown that students could access social networking sites to meet their information needs on

education, research, health, employment, politics and entertainment because the sites provide resources and services that can enlighten the students.

Positive use of social networking sites by students involves engagement in activities that cannot harm other persons nor damage their reputation. Such activities include networking with friends, sharing information that are of mutual benefit to both parties, posting and sharing pictures, videos, chatting, and absolute abstinence from any incriminating act.

While students could use social networking sites for personal development and actualization, literature has shown the possibility of mis-use by engaging in anti-social behaviour which could damage the personality and reputation of other people. Gardiner (2007) sees social networking sites as new and essentially unlimited set of frontiers. However, Jenkins et al (2007) perceive the frontiers as open spaces which often lack comprehensive and well enforced rules and regulations and thus harbor both tremendous promises and significant perils. Oftentimes, the relax web-environment in which students interact without any rigid policy could motivate unethical use of the social networking sites. Furthermore, perceptions of students of the use of the site could be significant factors influencing their attitude and on-line behaviour when using the social networking sites. According to Abbas et al. (nd), some of the mis-use of social networking sites by nursing students could be a result of a lack of knowledge of the ethical issues about the use of social networking.

The present study is an attempt to investigate the perceptions of usage of SNS and online behaviour of University of Ibadan students while using the social networking sites. University of Ibadan is the Nigeria Premier University established in 1948 for teaching, research, and service. It has 14 faculties, 5 centres and 4 institutes, which develop human resources in every areas of human endeavour. The University emphasis is promotion of research in all areas of development and this is predicated on its vision of being a world – class institution for academic excellence geared towards meeting societal needs.

Review of Literature

Social networking sites are Web-based services that allow individuals to post profile information, construct a list of friends and communicate with others using both synchronous and asynchronous messaging tools (Boyd and Ellison, 2007).

Popular social networking sites patronized by students include: Facebook, Myspace, Youtube, Google+, LinkedIn, Twitter, Blogs. Students' perceptions about the use of the sites could be a determinant of their behaviour while engaging in online networking. This reasoning is in line with Norman (1983) cited in Zhang (2013) which reported that human factors and human –computer interaction researchers postulated that users use and interaction with a system is mediated by their perception or mental models of the system. Rouse and Morris (1986) also opined that users' perceptions impact their understanding of the form, purpose and functions of a system.

Havard, et al (2012) investigated student athletes and non-student –athletes' online social networking usage. Their study specifically focused types of usage, perceptions of monitoring, and knowledge and perceptions of inappropriate online behaviour. Findings of the study revealed differences between the two groups' perceptions of OSN activity. Student- athletes differed from non-student athletes in their perceptions of general student knowledge regarding OSN dangers,

perceptions of provocative pictures. There is bound to be differences in students' perceptions regarding 'good' use and 'bad' use of online social networking due to individualistic tendencies of differences in feelings, view, education and knowledge about issues. To regulate the use of OSN in line with acceptable code of conduct, Brady and Libit (2006) reported that some school administrators have profound interest in educating their students on the proper use of OSN sites. In the same vein, Oppenhuizen (2008) opined that administrators could monitor for proper and improper OSN usage by students. However, he strongly advised that administrators should ensure that they are properly educating about and monitoring student OSN usage so as not to infringe upon student personal rights.

On the antisocial use of social networking, Folaranmi, Alo and Oyeyiola (2013) examined the effects of social networking sites on antisocial behaviours among secondary school students. The study adopted a descriptive survey approach using a sample of 800 secondary schools students selected from four local governments in Oyo town, Nigeria. Questionnaire was used as instrument for data gathering while frequency counts and simple percentages were used to analyse the respondents' bio-data information while correlation was used to test the hypotheses at 0.05 level of significance. The findings from the study demonstrate that there was a significant relationship between use of social networking sites and aggressive behaviour ($r = .95$, $N = 754$, $p < .05$). The study also found that there was no significant relationship with the use of social networking sites and truancy ($r = .015$, $N = 754$, $p > .05$) and finally the study revealed that there was no significant relationship between use of social networking sites and academic performances ($r = .045$, $N = 754$, $p > .05$). Based on these findings, the study recommended that the time adolescents spend on the internet should be reduced while parents should monitor their feeds on the networking sites. In addition, the study also recommends that law makers, inventors, government should put up control measures to bar adolescents from gaining access to explicit contents on social networking sites. The study concluded that when these measures are put in place for adolescent users, the negative effects of the social networking sites would be reduced to the barest minimum.

Griffiths, Light and Ryan (2013), based on a multi-method study of two online environments, Habbo Hotel and Second Life, incorporated social networking functionality and shed light on forms of what can be conceptualized as antisocial behaviours and the rationales for such behaviours. According to them, scamming, racist/homophobic attacks, sim attacks, avatar attacks, non-conformance to contextual norms, counterfeiting and unneighbourly behaviour. The rationales for sub behaviours included: profit, fun, status building, network disruption, accidental acts and prejudice were all identified as antisocial behavior via social networking sites.. Through data analysis, the authors were able to comment upon the difficulties of defining antisocial behaviour in such environments, particularly when such environments, are subject to interpretation via their use and expected norms. The authors also point to the problems face in conducting public and private lives given the role ICT played in the convergence of these two spaces and also the convergence of ICTs themselves.

Young people in Northern Ireland appear more comfortable than their parents in their use of new media technologies and appear to have embraced the participatory culture associated with social networking sites such as Facebook. Much of the empirical evidence points to there being little to differentiate between how young people use social networking sites in Northern Ireland and their peers in the rest of the United Kingdom. The Ofcom Children's Media Literacy Audit in the

Nations (2010) found that Northern Irish children aged between 5 and 15 years old were no more or less likely than their peers in England, Scotland and Wales to maintain a social networking profile. Indeed, the study found that 43 percent of children in Northern Ireland checked their social networking profile at least once a week, 2 percent higher than the average across the United Kingdom. This finding was congruent with previous research into patterns of social networking site use amongst children in the region. Lloyd and Devine (2009) found that 48 percent of 10-11 year olds in Northern Ireland maintained a social networking profile despite the membership of these sites typically being restricted to those aged 13 years old and over. The study also indicated that there was little difference between boys and girls in terms of their use of sites such as Bebo and that 29 percent of the respondents stated that they used these sites several times each week. This finding resonated with the results of the Ofcom Children's Media Literacy Audit (2010), which showed that 22 percent of 8-11 year olds had set up a profile on a social networking site.

A recent Ofcom (2008) study of social networking practices suggested there were five distinct groups of users in the United Kingdom: Alpha socialisers –users who use these sites sporadically to meet new people; Attention seekers – users who post pictures because they crave attention; Followers – people who use these sites to keep up with the lives of their peers; Faithfuls – people who use these sites to get back in touch with old friends and Functionals – users who use these technologies for a particular purpose. Potentially all of these users might post sensitive information on sites such as Facebook. A preliminary investigation into social networking practices in interface areas in Belfast found that communicating with family and friends and posting pictures were the most commonly reported purposes of social network use amongst interface residents (Reilly, 2010). Only a very small percentage of the respondents in this pilot study could be considered alpha socialisers. Few teenagers admitted to using sites such as Bebo to make contact with people who lived on the other side of the 'peace wall' and with whom they were not already familiar. This finding resonated with much of the current research in the field that indicates that the majority of teenagers who use social networking sites do so to sustain existing offline relationships rather than to contact strangers (Ellison et al, 2007; Watch Your Space Survey, 2008).

The Lloyd and Devine study (2009) points to the potential online risks that children may face on these platforms, with a small minority of 8-11 year olds (17 percent) confirming that they had met someone in person who they had made initial contact with on a social networking site. The Watch Your Space study (2008) also found that 40 percent of teenagers in the Republic of Ireland had met someone who they had first contacted on Bebo, with boys more likely to engage in this activity than girls. While there was no evidence to suggest that these contacts had been with 'online sex predators,' this finding nevertheless demonstrates one of the ways in which the behaviour of young people on social networking sites may leave them vulnerable to potential harm in the real world. Livingstone and Helsper (2007) argue that it is the children with the most Internet skills rather than the most self-efficacious who are the most likely to encounter risks on social networking sites (636). A preliminary report into stakeholder perspectives on online risks to UK teenagers found that the worst things that young people were likely to encounter on social networking sites were 'rude words, being subject to nasty personal messages, unwanted sexual advances and exposure to unwanted information and impersonation of identity' (CEOP, 2008: 11).

Carpenter (2012) conducted a survey of (N = 292) that measured self-promoting Facebook behaviors (e.g. posting status updates and photos of oneself, updating profile information) and several anti-social behaviors (e.g. seeking social support more than one provides it, getting angry when people do not comment on one's status updates, retaliating against negative comments). The grandiose exhibitionism subscale of the narcissistic personality inventory was hypothesized to predict the self-promoting behaviors. The entitlement/exploitativeness subscale was hypothesized to predict the anti-social behaviors. Results were largely consistent with the hypothesis for the self-promoting behaviors but mixed concerning the anti-social behaviors. Trait self-esteem was also related in the opposite manner as the Narcissism scales to some Facebook behaviors.

The need for educational programme regarding proper use of online social networking to checkmate student inappropriate online activity becomes more important as one reads about cases of abuse and mis-use of OSN in the literature. For example, Lack, Beck and Hoover (2009) reported cases of students having questionable content displayed on their profiles. Similarly, Coutts, et al (2007) revealed that undergraduate education majors were found to be involved in unprofessional use of Facebook. Medical students according to Ferdig, et al. (2008) also manifested high rates of unprofessionalism in using OSN.

Literature has shown that most students are unaware or mis-informed about the consequences of their actions when using the social networking sites. Are the students educated about acceptable mode of using OSN? Are they informed? Are there online policies that regulate the use of social networking sites by the students? Undoubtedly, the issues of privacy and security in online social networking are misunderstood by some students. According to Fernandez (2009), studies of user behaviour suggest that a significant minority are misinformed about how private their information truly is on SNS. Acquisti and Gross (2006) expressed concern about online users naivety by their remark that information that many users think is private can often be easily accessed by other users. Woodward (2007) describes the misconception that privacy settings can completely limit access to profile as "illusion of privacy". While a large proportion of university students have a deep understanding of positive use of OSN, Havard, et al (2012) noted that some students (evidenced by their usage of these sites), do not fully grasp the significance of using OSN sites inappropriately, or inadequately.

This paper looks at the perceptions of students of University of Ibadan about the use of online social networking and their level of involvement in anti-social behaviour whilst on line.

Research Methodology

The research design adopted for this study is descriptive survey research design. The design allows for the sampling of a large number of students spread across the fourteen faculties in University of Ibadan, Nigeria. The students' population was first stratified on the basis of faculties. A simple random sampling technique was used to select three (3) faculties - Education, Arts and Science. Two (2) departments were randomly selected from each of the three (3) faculties to make six (6) departments that participated in the study. In each of the departments, fifty (50) students were randomly chosen from the 200 level students to form a representative sample for the study. It thus stands that three hundred students (300) constitute the sample size for the study. These students were selected from the departments of: English, Philosophy Teacher Education, Library, Archival and Information Studies, Physics and Computer Science.

Instrument

The instrument used for data collection was a self developed questionnaire. It was divided into sections A, B, C and D. Section A elicited information on the Biodata of the respondents. Section B asked questions on the use of social networking sites. Section D gathered information on the social networking behaviour of the students.

Section C is a 10- item scale organized on a four- point Likert Scale to measure perceptions of students of the use of social networking sites. Section D is also a 9- item scale designed to measure the level of involvement of students in anti-social behaviour whilst on-line. It contain 7 - index raised as a uniform measure for anti-social behaviour which respondents were asked to rate on a four-point scale of Very high, High; Low, Very low.

In section C with 10- items and having 4- point scale, the minimum score for the items is 10 while maximum is 40. However, in Section D measured in a 4- point scale with 9 – items, the minimum score for a respondent is 9 while the maximum is 36. Section C was pre-tested to determine the validity and it has a reliability coefficient of $r = 0.54$ using cronbach alpha method while section D has cronbach's alpha of 0.953,

Procedure

Copies of the questionnaire used for data collection were administered by the researcher and lecturers who volunteered to assist in the administration of the questionnaire. Out of the 300 copies of questionnaire administered, 259 were returned and properly filled representing a response rate of 86.3%. The responses of the subjects to each item were scored and analysis was done using simple percentages.

Research Questions

This study was carried out based on the following research questions.

1. What are the social networking sites mostly used by the students?
2. What is the frequency of students' use of the sties?
3. What are the purposes for students' use of the sites?
4. What is the pattern of students' perceptions of the use of social networking sites?
5. What is the level of students' involvement in anti-social behaviour in social networking?

Data Analysis

The research questions were answered by using descriptive statistics of means, standard deviation, frequency counts and percentages.

Results and Discussion

Result and discussion based on the research questions are presented below.

Research Question 1

What are the social networking sites mostly used by students?

To answer this research question, students were asked to indicate the social networking sites they use most often. The result is provided in table.

Table 1: Social Networking Sites Used by Students

Sites	Frequency	Percentage
1. Facebook	241	89.6
2. Google+	152	56.5
3. Twitter	120	44.6
4. Youtube	92	34.3
5. Blogs	64	23.8
6. Online forum	40	14.9
7. Linked in	37	13.8
8. Myspace	23	8.6
9. All of the above	11	4.1

Table 1 has shown that 24 (89.6%) of the University students surveyed have accounts with Facebook. 152 (56.5%) frequently use Google+ for social networking while 11(4.1%) use all the social networking sites. It is glaring from Table 1 that Facebook and Google+ were the two mostly used social networking sites by the students.

Research Question 2

What is the frequency of students' use of the sites?

To answer the research question two, students were asked to indicate the frequency of using the networking sites. The result is provided in table 2.

Table 2: Frequency of Using the Social Networking Sites

Usage Per Hour in a Week	Frequency	Percentage
Less than 1 Hour	86	32.0
1-5 Hours	112	41.6
6-10 Hours	16	5.9
11-15 Hours	11	4.1
More than 15 Hours	33	12.3
No Response	1	0.4
	259	100

Table 2 reveals that 86 (32%) of the students spend less than 1 hours on social networking sits per week. 112(41.6%) spend 1-5 hours, while 33 (12.3%) spend more than 15 hours per week.

Research Question 3

What are the purposes for students' use of the social networking sites?

To answer research questions three, students were asked to indicate the purpose of using social networking sites. The result is provided in table 3.

Table 3: Purpose for use of social Networking Sites

Purpose	Frequency	Percentage
Network with friends	189	70.3
Post and share pictures, video	147	54.6
Chat with friends	202	75.1
Reading friends' posts	171	63.6
Seek for information	191	71.0
Share information with friends	161	59.9
Seek for counsel on sensitive issues	72	26.8
All of the above	64	23.8

Table 3, reflects the reasons behind students use of the social networking sites. Looking at Table 3, 189(70.3%) network with friends on the sites, 202 (75.1%) chat with friends while 191(71.0%) use the platform of social networking sites to read friends posts. The purposes indicated on Table 3 suggest that students mainly use the networking sites for social interaction.

Research Question 4: What is the pattern of students' perceptions of the use of social networking sites?

To answer the research question 4, students were asked to indicate their perception on the use of social networking sites. The result obtained is presented in table 4. Table 4 reveals students' perceptions of the use of social networking sites. According to Table 4, item 1 confirms that majority agreed by aggregate percentage score of 99.5%. The mean score of 3.58 also lend credence to this fact. Item 2 on Table 6 shows that majority agreed with freedom to post information that have negative consequences on other people as shown by aggregate percentage score of 61.7%. Items 3 on Table 4 reveals that majority disagreed with the statement that "SNS is for social interaction; therefore, there is no need for policy to regulate what we can share on it". An aggregate percentage score of 65.8% that disagreed and a mean score ($X = 2.17$) which reflects "Disagree" on the Likert 4- point scale of measurement also confirms this.

To determine the pattern of perceptions of students in all the items, it was necessary to compute the overall mean score for all the ten (10) items. The value of 2.91 as overall means score suggested positive students' perceptions of the use of social networking sites. This show that majority of the students agreed with most of the items that emphasize positive use of social networking sites.

S/N	ITEMS	SA	A	D	SD	X	SD
1	Internet ethics of goods behaviour must be observed when using the SNS	166 61.7	91 33.8	5 1.9	3 1.1	3.58	.591
2.	There is freedom of expression on SNS even to post comments and pictures that have negative consequences on others	58 21.6	108 40.1	61 22.7	39 14.5	2.70	.971
3.	SNS is for social interaction, therefore there is no need for policy to regulate what we can share on SNS	26 9.7	57 21.2	111 41.3	66 24.5	2.17	.921
4.	Anonymity allows me to share some sensitive information on SNS including questionable contents	44 16.4	127 47.2	67 24.9	25 9.3	2.72	.853
5.	One is free to gossip and rumour on SNS because it is social media.	40 14.9	117 43.5	69 25.7	38 14.1	2.61	.923
6.	There is nothing wrong in bullying, harassment and threat on SNS.	13 4.8	29 10.8	101 37.5	120 44.6	1.75	.840
7.	Social sites could be used for academic purposes	160 59.5	85 31.6	16 5.9	3 1.1	3.52	.664
8.	Social sites could be used to socialize with friends	159 59.1	93 34.6	11 4.1	2 0.7	3.54	.615
9.	Social sites could be used as platform for social development	127 47.2	111 41.3	21 7.8	4 1.5	3.37	.698
10.	There are social risks and invasion of privacy on SNS	74 27.5	147 54.6	24 8.9	9 3.3	3.13	.717

Research Question 5

What is the level of students' involvement in anti-social behaviour in social networking?

To answer the research question 5, respondents were asked to indicate their level of involvement in the anti-social behavior on social networking sites. The result obtained is presented in table 5.

Table 5: Level of students' Involvement in Anti-Social Behaviour in Social Networking

Behaviour	VH	IT	L	VL	X	S.D
1. Bullying, harassment, threatening	40 14.9	49 18.2	46 17.1	124 46.1	1.67	0.81
2. Posting questionable contents	35 13.0	89 33.1	53 19.7	79 29.4	2.06	.89
3. Gossip, rumour, character assassination	42 15.6	57 21.2	49 18.2	108 40.1	1.79	1.05
4. Posting contents that could not be exposed to close associated	21 7.8	67 24.9	6.3 23.4	101 37.5	1.85	1.00
5. Lying, cheating, gambling	30 11.2	56 208	44 16.4	126 46.8	1.85	1.26
6. Using foul language/harmful communication	36 13.4	52 19.3	52 19.3	114 42.4	1.91	1.13
7. Fraud, theft	40 14.9	49 18.2	31 11.5	13.6 50.6	1.79	1.17
8. Hacking	34 12.6	62 23.0	38 14.1	122 45.4	1.91	1.13
9. Post videos, pictures, inaccurate information about people	46 17.1	41 15.2	36 13.4	130 48.3	1.73	1.18

Note VH = Very High, H = High, L = Low, VL= Very Low.

Table 5 gives a vivid picture of the level of students' involvement in antisocial behaviour when networking on social media. Item 1 on table 5 indicates that student's level of involvement in bullying, harassment and threatening on social networking sites is low as shown by aggregate percentage of 63.2% that subscribed to Very low and Low. In item 2, 49.1% of the students indicated Low level and Very low level of involvement in anti-social behaviour. Summarily, each of the nine items having a mean score of less than 2 except in items 2 where the mean score is 2.06 is indicative of the fact that the level of students' involvement in anti-social behaviour on social media is very low. This is also buttressed by the point that the overall mean score for all the nine (9) items is 1.84 which reflect very low on the 4- point scale used for measurement.

Discussion of Findings

The study revealed that Facebook was the social networking sites mostly used by University of Ibadan students. This agrees with the findings of Vanhagen and Husband (2011); Hall, Hanna and Huey (2013) which report Facebook as the most popular social networking site used by students.

Another important finding of the study was that social networking sites were used mostly for informal communication like chatting with friends and networking with friends. However, a large percentage of the students also used the sites for academic purposes like seeking for academic information. This finding corroborates Afendi, Mohammed and Haslinda (2009) findings that

Malaysian University students mainly use online social networking sites for informal learning, communicating with peers and arranging meetings. Similarly, this finding supports Mohammed and Sumitha (2011) which reveals that students of Calicut University, Kerala use social networking sites mainly for friendly communication. Majority of the students surveyed spent between 1-5 hours per week using social networking web sites. This implies that majority do not spend above 42 minutes per day using social networking sites. The students could be classified as light users of social networking sites as indicated by Capano, Dens and Desjardins (n.d) which defined light users of social media as usage of fewer than 31 minutes per day and heavy usage as usage exceeding 61 minutes per day (above 7 hours per week).

The finding of this study disagrees with Christofides, Muise and Desmarous (2009) which reported that previous research found that students mainly spend between 10 and 60 mins on Facebook per day. Ross et al., 2009 also reported that 79% of his respondents reported that they spent between 10 and 60mins on Facebook daily. It also disagrees with Akubugwo and Naria (2013) which disclosed that students can spend at least 2-3 hours daily on social media.

The students surveyed had positive perceptions of the use of social networking sites. They perceived the use of the sites as platform for social interaction and avenue for seeking and sharing academic related information. This finding is in line with Havard, et al. (2012) which reported that students use online social networking sites as a way to build, enhance and exchange social capital.

The level of involvement of the respondents in online antisocial behaviour was found to be very low. It could be inferred that their positive perception of the use of social networking sites largely influenced their proper usage of online social networking. An overwhelming percentage of the respondents feel anti-social behaviour to be a very big problem. This finding is not in line with Hall, Hanna, and Huey (2013) which revealed a high level of social networking use and potentially inappropriate attitude towards professionalism among pharmacy students when using social networking sites. This finding also disagrees with Kirshner and karpinski (2010) conclusion that social media is commonly used among students who exhibits care free attitude, luxurious living and generally flout laws, easily copy bad attitude, disrespectful to parents and teachers, not serious with their academic works. This study disclosed that the students surveyed in the study were not deviant users.

The study has revealed that University of Ibadan students are not deviants in the use of social networking sites neither do the use of the sites have negative effects on their social behaviour. Those that use social media are well – behaved as shown by very low level of involvement in online antisocial behaviour.

Conclusion and Recommendations

The use of social networking sites for social communication has become a way of life among the university students in Nigeria. While most students frown at mis - use and abuse of the networking sites by posting and sharing information that could damage reputation of other people, a very few students hold the view that anonymity and privacy of the sites could be used to communicate whatever content they like. It is therefore imperative for school administrations to mount Information Literacy programmes and educate students on what constitute acceptable use of social networking sites. Furthermore, there is need for formulation of online social networking policy to

regulate students' conduct when using the social networking sites. Continued education would also promote good use of the sites for communication and academic purposes.

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Self-directed learning in an Internet age: the role of academic libraries in Nigeria

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Abstract

Advancement in technology has given rise to the explosion of information resources on the Internet which has invariably drawn many self-directed learners to seek learning online. While this is a welcome development, the use of the Internet for learning, however, is not without challenges. Learners may be overwhelmed by the volume of resources online; they have to ascertain the reliability of information resources and at the same time make ethical use of them. It, therefore, behooves on librarians as information professionals to take a leading role in impacting information literacy skills. This paper, explores the use of internet for learning, identifies the challenges associated with it and the roles academic libraries could play in supporting learning in Nigeria.

Keywords: Academic libraries, Information literacy, Internet age, Self-directed learning.

Introduction

Learning is central to the concept of education which can be seen as a process of acquiring knowledge. The Federal Government of Nigeria has since identified education as a major vehicle for change in the country by basing its philosophy of education on the development of the individual into a sound and effective citizen through the provision of educational opportunities at the primary, secondary and tertiary levels. However, while education is mostly acquired from traditional classroom settings, the Internet has given impetus to the proliferation of information resources. Students are now exposed to information in online databases, email, films, social media such as Facebook, YouTube and so on, in addition to print resources and as such find it easier to engage in self-directed learning. Self-directed learning, while depending much on an individual's ability to engage in learning activities, does not entirely exclude the support of others. Considering the complexities associated with the use of some Internet resources and the difficulties faced by learners who grapple with understanding various sources of information, techniques for locating, accessing and evaluating information as well as issues of ethics associated with information use, it, therefore, becomes necessary for librarians to support the self-directed learner.

The concept of self-directed learning

Self-directed learning is rooted in the need to better oneself. It is a learning situation where the learner takes responsibility for the actions involved in learning. Self-directed learning is of particular importance in the 21st century considering the rate at which technology changes. Indeed, Illich (1971) argues that specialized knowledge is often acquired well past the age of formal schooling, and in many situations through educational processes that do not center on traditional schooling. It, therefore, becomes obvious that not everything can be learnt in the formal school environment and as such individuals must take the leading roles in identifying their areas of need and consciously work towards improving themselves. Pink (2009) corroborates this by arguing that the secret to high performance is rooted in the personal desire to learn and create new things.

Self-directed learning, according to Knowles (1975), is a process in which individuals take the initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes. This definition makes it clear that the learner can take the learning initiative with or without the help of others. In other words, learning motivation could also be internally or externally generated. It is synonymous with self-study (Candy, 1991), adult education (Merriam & Caffarella, 1999) and student-centered education (Ainoda, Onishi, & Yasuda, 2005). Self-directed learning has three dimensions attached to it (Garrison, 1997) which are: self-management, self-monitoring, and motivation. The drive for learning is expected to emanate mostly from the learner who takes control of managing and monitoring the learning process in order to achieve the learning objective.

Summing up the concept of self-directed learning, Hiemstra (1994) affirms the following: (a) individual learners can become empowered to take increasingly more responsibility for various decisions associated with the learning endeavor; (b) self-direction is best viewed as a continuum or characteristic that exists to some degree in every person and learning situation; (c) self-direction does not necessarily mean all learning will take place in isolation from others; (d) self-directed learners appear able to transfer learning, in terms of both knowledge and study skill, from one situation to another; (e) self-directed learning can involve various activities and resources, such as self-guided reading, participation in study groups, internships, electronic dialogues, and reflective writing activities; (f) effective roles for others in self-directed learning is possible, such as dialogue with learners, securing resources, evaluating outcomes, and promoting critical thinking; (g) some educational institutions are finding ways to support self-directed study through open-learning programs, individualized study options, non-traditional course offerings, and other innovative programs.

The Internet and self-directed learning

The use of the Internet is a global phenomenon. WorldStats (2012) noted that there are 2,405,518,376 internet users in the world. For Africa the figure was given as 167,335,676 while Nigeria has the share of 48,366,179. Considering the avalanche of information on the Internet which is made accessible without the boundaries of time and space, hardly can anyone carry out a successful research in business, education or take meaningful life decisions without referring to an internet resource. Draves (2002) suggests that the Internet offers several advantages to learning such as learning at personal speed, access to vast quantity of information, ability to track and test personal learning effort. The use of the Internet in higher education is affirmed by Kerins, Madden

and Fulton (2004) whose study of graduate engineering students in Ireland reported that the majority of the students use the Internet as the first source of information when carrying out a research project. This was corroborated by OCLC (2006) report that 89 percent of college student information searches begin with a search engine.

Several tools according to Saxena (2013) exist on the Internet to support learning amongst which are:

- ***Free educational resources***: quality resources provided freely for learning. Through these resources students are able to learn any subject they want on their own, and the constant need for a teacher is eliminated.
- ***Personal Learning Networks***: can be created through blogs, social networks such as, Twitter and Facebook, to facilitate collaboration.
- ***Video-conferencing tools***: Using tools such as Skype individuals can connect to discuss topics of interest.
- ***YouTube/iTunes***: YouTube adds the visual element to make learning more powerful. They empower students and teachers to design their own learning.
- ***ePortfolios***: These help students keep track of their own achievements and share them with others. They are free and easy to create; students create a container like, a blog, wiki or website, organize it and post their work.
- ***Self-assessment***: Instead of relying on teachers to get evaluated, students could assess themselves by sharing their work with others to get feedback for improvement, practice tests on test prep and review sites, create videos and look for views and comments on them.

Academic libraries and the self-directed learner

The Nigerian National Policy on Education (2004) identifies the library as one of the most important aspects of educational support service used as media for disseminating information and enhancing literature search. Islam (2004) as cited in Adio & Olasina (n.d.) defines the library as an instrument of self-education, a means of knowledge and factual information, a centre of intellectual recreation, and a beacon of enlightenment that provides accumulated preserved knowledge of civilization which consequently enriches one's mental vision, and dignifies his habit behaviour, character, taste, attitude, conduct, and outlook on life. The importance of the library can be seen in the way it is described by several authors. Odiase, Unegbu & Haliso (2001) described the public library as the peoples' university. The academic library on the other hand, is unarguably the centre point of all academic activities within tertiary institutions as Olanlokun and Salisu (1995) describe it as the nerve centre of educational institutions. The primary goal of libraries irrespective of type is to aid the pursuit of information through the provision and access to information resources within an environment that fosters intellectual development. To reach this goal, libraries make efforts to provide adequate information materials, modern facilities, and employ qualified staff who will work to meet users' information needs.

The self-directed learner in an Internet age, no doubt, faces challenges when seeking for information as noted by a number of researchers. Hasegawa & Kashihara (2006) point out that the web makes it difficult to locate suitable resources on particular topics of interest. This is especially

so, when the learner is faced with information in a variety of formats, some of which may be too complex to understand or lack adequate search skills necessary for navigating the quantum of information available on the Internet. The knowledge of databases relevant to one's inquiry can also be a challenge as awareness of databases facilitates the self-learning process. When the self-directed learner has little or no knowledge of relevant databases, it could hinder the learning process. Hil & Hannafin (2001) emphasize the need to understand the relationships between types of information resources evaluate the validity and reliability of the resources and make intelligent choices among them. In view of these challenges, Fowell & Levy (1995) assert that librarians as information professionals must take a leading role in developing and delivering the learning support strategies which will be appropriate to the new learning environment.

Information literacy as noted by Dangani (2009) is one of the methods through which librarians' support learning strategies in the online environment. Information literacy is defined by the Association of College & Research Libraries (ACRL) (2014) as a set of abilities requiring individuals to recognize when information is needed and the ability to locate, evaluate, and use effectively the needed information. Information literacy according to the association is related to information technology skills, but has broader implications for the individual enabling him or her to use computers, software applications, databases, and other technologies to achieve a wide variety of academic, work-related, and personal goals thereby enabling them to master content and extend their investigations, become more self-directed, and assume greater control over their own learning. The importance of information literacy skills in self-directed learning is acknowledged by Rowntree (1995) who states that computer skills, time management skills, interactive skills, and literacy skills are essential for successful online learning.

ACRL (2014) describes an information literate person as an individual who is able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one's knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally

While noting the importance of information literacy, Dutton (1990) argues that the skills required to maximize the potential of electronic resources are much greater than those required for searching printed sources. These skills in the author's view include a knowledge of the structure of the database and the instructions which must be input into the computer by the searcher, as well as an understanding of the ways in which the instructions are linked with one another. In an effort to teach information literacy skills to meet the technological demands of the information age, libraries in the developed world develop self-directed learning modules which are easily accessed through their websites as in the case of James Hardiman Library, National University of Ireland (n.d). In addition, Hoffman et al (2011) reports the result of a study by the American Library Association which showed that 87% of libraries provide some type of technology instruction. The same, however, may not be said of libraries in Nigeria.

The Nigerian challenge

Nigeria as a country has its own myriad of challenges which also rubs off on the self-directed learner. Even in situations where an individual desires to work towards the achievement of academic goals, there are issues which are general to the country that adversely affects the learner. Nigeria as a country is yet to boast of twenty four hours a day/seven days a week power supply, hence the self-directed learner is constrained as the likely hood of 24/7 access to the internet is not guaranteed. This is also noted by Adomi (2005) who points out that the electricity situation in Nigeria is an impediment to the development of the internet in Nigeria. As if the issue of power failure is not enough, the Daily Independence (2014) also affirms that Nigeria's broadband access remains very low compared to countries like South Africa, Kenya and Ghana. In addition, Bac (1998) as cited by Quadri (2012) observed that where internet exists in an institution very little time allocation is made for students' use of the internet.

Akande (2011) in a study which examined the use of computer and Internet facilities for distance education by sandwich students in University of Ado-Ekiti, Nigeria, reports that even though distance learning education programme is expected to be carried out in an ICT environment through electronic communication by the use of computer and Internet resources, half of the respondents surveyed could not use the ICT facilities because they lacked the skills for using them. This was further confirmed by Ilogho & Nkiko (2014) in their study of information literacy and search skills of students in five private universities in Ogun State, Nigeria where findings revealed that most students showed high deficiency in identifying diverse information sources. Funding was also identified as a challenge for the self-directed learner in Nigeria as studies by Salaam & Adegboire (2010); Adeoye & Udeani (2008) affirm that the Nigerian student is financially constrained when it comes to owning a computer or even accessing the internet. This is due to the fact that Internet access in most Nigerian universities is provided at a huge cost.

Contextual discussion

The need for academic libraries to support self-directed learning in an Internet age is crucial especially as Knowles (1975) and Hiemstra (1994) makes it clear that self-directed learning does not necessarily mean all learning will take place in isolation from others. In other words, the self-directed learner must not necessarily work alone but could receive support from others such as faculty and librarians. The findings of Akande (2011); Ilogho & Nkiko (2014) which revealed high deficiency in identifying diverse information sources and lack of ICT skills also makes it necessary for academic libraries in Nigeria to embark on user education as Rowntree (1995) affirms that computer skills, time management skills, interactive skills, and literacy skills are essential for successful online learning. Although the provision of electricity and Internet connection are mandatory for utilising the Internet, Adomi (2005) and Bac (1998) as cited by Quadri (2012) observed that this is not always the case for academic libraries in Nigeria as the country faces the challenge of electricity and even where internet exists in an institution very little time allocation is made for students' use of the internet.

Conclusion and Recommendations

There is no doubt that a major objective of academic libraries is to aid learning and development in the society. Although individuals may take the initiative for self-directed learning, this does not

absolve academic libraries from performing their primary duties to library users hence the following recommendations are made:

Based on the above, the following recommendations are made:

1. Academic libraries in Nigeria should intensify efforts in teaching information literacy skills. It is no longer enough to limit user education to basic understanding of information resources in the library. Users should also be equipped for independent learning in the online environment by covering areas such as electronic search skills, website evaluation and ethical use of information resources.
2. User education in academic libraries should not be limited to classroom experience or new intakes orientation; rather, libraries should go a step further by developing information literacy tutorials which should be made available on their websites for easy accessibility.
3. Libraries working with their parent organizations can provide access to the Internet for free or at a very minimal cost. By so doing, it would not only reduce the financial burden that self-directed learners face in accessing the Internet, but also boost library visits, as well as the image of the library.
4. While some individuals may have personal computers to work with, there are still those who depend on the library for such provision. Academic libraries should, therefore, endeavour to provide adequate computers with Internet connection to meet the needs of such users.
5. The use of Information Communication Tools should not be taking for granted and as such academic libraries in Nigeria should endeavour to have skilled personnel to assist students in the face of technical difficulties.

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**E-Library Technology and the Future of Universities Libraries:
A Case Study of University Of Ilorin, Nigeria**

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Abstract

Beyond any doubt information communication technology is readily and vastly an important field for all information practitioners. However, this is consequent to its relevance and applications task in the Library and Information Centers. The main applications of ICT to practitioners of Information Technology are mainly in the areas of networking, on-line searching, CD-ROM technology, Library Automation and Internet to mention a few. Principally, electronic library (e-library) is provided with reading materials and it renders services in an electronic format. It makes use of material such as electronic data bases, CD-ROM discs, audiotapes, video, microforms and others that make use of electricity. Thus, this paper examines e-library technology and the University Library with a view of its future. The paper highlights how e-library technology is contributing positively to learning, teaching research and service objectives of the University Library. Also it suggests that responsibility management of e-library technology should be encouraged through training, re-training and sensitization of both the users and the library officers that will be providing the services in an effective manner in the University.

Introduction

Undoubtedly information and communication technology has become an important field for all information professionals. This is as a result of its relevance and application centers. Thus, the major applications of Information Communication Technology (ICT) to information professionals are numerous especially in the areas of networking, on-line searching, CD-ROM technology, library automation and the Internet to mention a few.

Basically, the term information communication technology as deemed by Marshall (1984), is the merging of computerization and telecommunication for the purpose of handling information; the application of technologies to information handling; include generation, storage, processing retrieval and dissemination. IT also includes acquisition, processing storage and dissemination of information textural, numerical, pictorial and vocal. Furthermore, in a broad based term it comprises of gathering (acquisition), packaging (organization), storage and retrieval or dissemination of information that could be in textural (books and document) numerical pictorial and vocal (audio-visual) forms or a combination of the above multimedia, combining usages of computer and telecommunications means. In the same way, Emuakpor (2002) sees it as all forms of technology applied to the processing, storing and transmitting of information in electronic forms. Thus explained that the physical equipment that is used for this task is computers, networks and communication equipment, fax and electronic machines and pocket calculator. Ayo (2001) views it as the use of computer system and telecommunications equipment in information handling; consisting essentially of three basic components like electronic processing using the

computer; transmission of information using telecommunication equipment; and dissemination multimedia. It is obvious that IT is in use in libraries with electronic infrastructure and facilities that are used to effect improvement towards providing efficient services to the user. These facilities are hardware, software and communication links between the service outlets of different libraries to effect improvement towards providing effective service to the user and sharing of common resource facilities, not ordinarily storing documents, their rapid and effective transmission and the rapid expansion of diversified information occurs which is tagged information explosion. There is the need for a scientific approach to information and for elucidation of its characteristic properties that leads to two principal changes in interpreting the concept of information. Firstly, it was broadened to include information exchange not only between two individuals (one to one) and also between machine and another. With the above, the pace of change brought by the new technologies has had a significant effect on the way people live, work and play all over the universe.

Capron (2000) noted that telephone; radio, mail, book, newspapers and periodicals are the traditional ways in which users forward and receive information. Ever since the mid-1960s, data communication systems basically computer systems equally transmits data over communication lines such as the telephone lines. Today, a user of the Internet has revolutionized access to information for the global business entirety, libraries, education and individual concerns. On this note, few among the famous ones are the likes of the worldwide web otherwise referred to as www, file transfer protocol (FTP), E-mail, and telnet. All these technological devices are regarded as central to the notion of globalization philosophical agenda. This is to say, that the internet and its technology has continuously had profound effects on the promotion of information sharing, particularly in the academic world effecting rapid transactions among businesses while encouraging greater global collaboration at all levels, (individually and organizational levels). Thus developing potentials by these technologies, to develop 'virtual campuses' and virtual libraries to increase student access and participation by gaining from the benefits of these technologies (Ogunsola, 2004).

Nancy Schiller as reported by Daniel (2000) defined a virtual library, as a Library where computers and Telecommunications technologies make resources achievable. Daniel (2000) reported that it was Nancy Schiller whom firstly used the expression which is today referred to variously as 'digital library; an electronic library, community network or simply as a library without walls (Ogunsola, 2004). The organization of information (knowledge) is essential to its effective exploitation and dissemination. This is so because, as the quality of knowledge expands, so the need to organize becomes more pressing. This resulted or gave rise to a vast number of different means of organizing information being devised and exploited. The ever increasing degree of specialization in all areas of human knowledge coupled with the vast output of new information placed heavy demands on library information storage and retrieval systems which is beyond the capacity of the traditional methods except the use of IT devices. However, the improvements and variations in the two fields have had an enormous role to play in the methods of information processing and dissemination in academic libraries by improving the usage quality to which such libraries have adopted but this was aborted and proved futile due to certain inadequate, economical, geographical location, political instability, social and cultural exposures. As a result of this, comprehensive application of IT and their operational roles are noted. As regards the above, the significance of this study lays both in the critical and fundamental role that IT plays not only on education generally but particularly on library activities. Adeyemi, (2004) and Aina, (2002) noted

that the usage of audiovisuals and electronic resources broke the barrier of time, distance, and location that impeded the growth of formal education. It was emphasized further that students use this resources to complete major assignments and generally in supporting their academic activity (Nwizu, 2008). Adeyemi, (2004) buttressed and stressed further that audio visual and electronic recourses have the potential of enhancing students learning activities, the contemporary educational policy on these resources have the potential that the development of teaching and learning is widely discussed and take lead in the discussed issue role and functions.

In essence the objective of this study among others is to identity the information technology devices at hand at the university of Ilorin library; also, the study aims to identify their effect on the job performance. Also, intends to identify the amount of available trained, competent staffs and the availability of funds for the management of the devices, and finally to sort out the constraint and other encumbrances towards ICT for the e-library service delivery.

Statement of the Problem

Variously, it has been noted that the application of modern information inventory like IT academic library service and activities in higher institution in Nigeria is in shortfall equal to some factors that include fair level of infrastructural development and man competency in the national system the preferences given to manual library operations due to the belief of the library professionals in the IT accruable or derivable benefits in its use and applications. While those that are aware of its potentialities and possibilities of its applications vis-à-vis its benefits are timid and afraid of elimination from their jobs. But they are quite aware that its applications will promote a required efficiency and effective performance of jobs and promote enhanced service delivery. Routines and functions like acquisitions, cataloguing, administration, circulation and classification, serials control and information retrieval will be faster and quicker. The study investigates the availability of IT facilities at university of Ilorin library without including other universities in the study. Other libraries of Tertiary institutions in the state would not be included sequel to the fact that they fall short of the requirements needed for this study.

Research Questions

The study provides answers to the following research question;

1. What are the available IT devices for the e-library at the university of Ilorin, library?
2. Are trained staffs available to handle the IT devices for e-library?
3. What is the budget / fund available for proper maintenance of the devices?
4. What are the challenges to the effective application of the IT devices in the library and how can it be addressed.

Literature Review

Information Technology (IT): Strategies and Adoption

Effective implementation of IT as it is referred to needs to be backed up with a wealth of management capacity to address related issues before its incorporation to the library use. There is the need to consider foremost knowledge of trends of technological innovation, a detailed analysis of library specifications and requirements, identification of library goals, objectives and scope, management commitment and support for the project (IT) user education (Aina, 2004; Oni, 2004).

Among others, Aina (2004) listed some question that needs to be addressed and essential when considering application and adoption strategies:

- What are its key capabilities (capacity), merits and demerits (scope/ limitation) on the goals of the library?
- What are the techniques and planning strategies vis-a-vis their effectiveness?
- What are the technological alternatives and requirements (resources) needed?

Further to these, the following explanations are given below:

- Planning: planning in the context of IT implementation
- Capabilities: the major capabilities central to weighting the merits and demerits to effect final decision. In any case the hints (guide) below should be considered.
- Who is the user of the particular (IT) system?
- What are the project adaptations (adoption) of the IT
- What is the detail(s) of the particular IT systems as against advantages and disadvantages in the requirement of the library?
- What types of communication capacities are required?
- What types of specific resource(s) are needed to boost the performance of the IT?
- How will the adoption of IT systems be made to be relevant to the existing order in the library?

These include acquisitions, cataloguing, circulation serials and the user services in the library.

Nigerian Academic Libraries and E-Library

Most clearly, the astronomical demand and yearnings for distant education in Nigeria is ever increasing, while this is still based and serves with the traditional information technology of print media. This gap needs to be integrated with information technology into the distant education programme. But majority of the tertiary institutions in the country (Nigeria), including those that have resounding internet connectivity are still at low ebb of integration of ICT both in teaching, learning, research and document information storage and managerial services and particularly in their library service delivery (Aina, 2002; Ogunsola, 2004). This fact was summarized by Ekong (2005) while he presented that some of the first generation universities like university of Benin Library, university of Nigeria library and some few others, have commenced digitization of their libraries and the network of library information connectivity have also been established through the university's campus network the internet with the advent of IT strategy, adoption and with the application. Information technology with e-library evolution some Nigeria University campuses are now in need of lots of IT resource facilities (Ogunsola, 2004). This has given opportunity to both lecturers and student to make use of the facility resource for their academic work, research and others using various IT devices like e-mail and internet browsing facility are together for e-library service with ease within little time. Probably for this reason the center for learning resources (CLR) Covenant University, Otta has been placed on the platform of full application of ICT because funds are provided for the innovations. Similarly, every member of the academic community at the Obafemi Awolowo university library including librarians can easily access information on any book publication in the library of congress in the United States of America (USA) with the assistance of IT for further development of e-library service delivery.

With the strength and capacity of IT, transformation of university libraries to new information service units is feasible, hence providing electronic cataloguing, OPAC electronic acquisition /serials control, electronic inter library loan and circulation functions can be performed within the context of e-library. This is indeed a breakthrough educationally in the globe, which Nigeria Academic library could not ignore.

On this note, Ekong (2003) noted that the federal Government of Nigeria and international funding agencies are also interested in the overall development of ICT in Nigeria Universities which will no doubt fasten, make teaching easier, learning and promotes the borders of e-library (ICT) in the academic libraries. It was in the strength and spirit of this understanding that probably encouraged the Federal Ministry of Education. Before embarking on this project certain factors must be considered and be assured of, such as cost implication (is the project worth it?), success (skillful personnel?), training needs (By the vendor), Attitude of management (in support or not?).

However, it is highly essential to acquire knowledge of a particular IT equipment configuration, so as to reduce the possibility of running in to problems when the system is in operation. This is due of the fact that IT equipment's have a number of separate components that can be implemented separately or integrated into the control unit.

Library services and E- library: Application of Adoption

Microcomputers are meant for library processes and functions such as acquisition, cataloguing, serials and control or circulation control bibliographic control or dissemination of selective information (DIS) (Nkhoma, 2003). These are the types designed for libraries. According to (Hutchinson et al 2000.) "The application of IT to the operation of libraries and information centers is to ensure that information is delivered timely, accurately, precisely and relevantly disseminated". The traditional manual library system, whereby staffs perform the various tasks needed to complete each operation is now taken over with the advent of computers and this is library Automation corroborating advancement of library Automation involves seeing it as captured by Bierman (1980) in Madu (2002) and cited by Abdulwahab et al (2011).

Thus as the use of computers and associated technology to do exactly what has been done in libraries with the justification of reduced cost and or increased Performance.

From the above it can be deduced that automation helps on the acquisition of organization, storage and dissemination of information in libraries. IT is generally applied to library services in a number of ways, to establish National Virtual (Digital) Library project to provide an equitable manner and cost effective, improved access to national and international library and information resource facilities to shared locally available resources with libraries all over the globe using digital technology (IT) among other things. But a model virtual (Digital) library with central control and connectivity at the National University Commission will be a worthy laboratory of sort for the university – based libraries and more accessible to the Nigeria tertiary institution libraries.

Research Methodology

The study adopts a survey research design. The target population comprised all the active user of the University of Ilorin Library, including both registered undergraduate and postgraduate students totaling 18,990. Out of this number a total of 3, 990 was conveniently sampled, representing 21.0%

of the population. Data was collected using a self-administered the questionnaire. Data was also collected from staff at the ICT Department using interviewed.

Results

Table 1 shows the respondents' use of available IT facilities in the institution's library. Internet had majority response (74.3%), followed by the use of computer facilities (64.8%). Use of facsimile facilities was the least. Approximately 13.4% of the respondents indicated that they did not use any of the IT facilities available in the Library. When asked to explain why they did not use the IT facilities available in the Library, 92.2% explained that they were not aware of most of the IT facilities available in the Library while 5.2% of the respondents explained that they did not know how to use the facilities. However, 80.7% of the respondents that they had unrestricted access to the available Internet facilities.

Table 1: Use of information technology facilities

Facilities	Frequency (n=3990)	Percentage
Internet	2,965	74.3
Computer facilities	2,586	64.8
Audio- visual	810	20.3
Fax	599	1.5

Table 2: Experience on the use of Internet facilities

Responses	Frequency (n=3990)	Percentage
With the use of Internet facility I find what I want	2713	68
I do usually find what I want to buy with frustration	479	12
I avoid the use of internet facility in general	399	10
Internet facility is frustrating	173	3.3
I find it difficult to obtain what I want from others	266	6.7
Total	3990	100

Table 2 reflects the experiences of the users with using the Internet facilities available in the University. The respondents that are satisfied are (68%), considerably satisfied (12%), avoid its use 10%, having difficulty with its use (3.3%) while others are not specific (6.7%).

Table 3: Problems and Challenges of E-Library Service

Responses	Frequency (n=3990)	Percentage
Frequent power failure	3900	97.7
Network failure	70	1.3
Lack of assistance	5	0.005
I don't know how to use it	5	0.005
Others	10	0.05
Total	3990	100

The table mentioned among others the problems encountered by the users when using e-library (IT) facilities in their institutions' libraries, the most prevalent and essentially significant of all the problems is frequent power failure (97.7%) beside the constant poor network connectivity usually occasioned by network inadequacy (1.3%). Apart from the above, other problems mentioned are the inadequacy of computer systems, space to accommodate user external storage device like flash drives, CD or diskette, server's low responses and inability to locate needed information with nobody to assist. But majority (97.7%) of the users had formal orientation on how to use the facilities.

Table 4: Responses on the future of E-Library in the Institution

Responses	Frequency (n=3990)	Percentage
There is positive hope for the future of e-library	3970	99.08
There is no future for the e-Library	10	0.010
Not sure of e-Library's future	5	0.005
e-library's future is not bright	5	0.005
Total	3990	100

From the table above majority of the respondents (99.08%) expressed positive hope on the future of e-Library while 0.010% expressed no hope. Also little hope and no future were expressed (0.005%).

Findings from ICT staff

ICT staff in charge of operations of the University of Ilorin IT services, including the e-library service delivery, were also interviewed. Findings from interviews revealed that some of the services of the University Library were not fully automated. The available ICT facilities and services included computers, v-sat, modem, CD-ROMs, slide projectors, video cameras, radio and television sets, CD and DVD machines. The Library subscribes to e-journal databases. Although the Library does not share its resources with other libraries, plans are in the pipeline to do so in the nearest future. The Library's ICT section provides CD-ROM services to meet the needs of the users.

The Library uses database management systems called ALICE. The Library is in the process of migrating to locally designed management system called Kottn. Kottn is currently being used to run all the housekeeping chores of the library, which includes acquisition, cataloguing and classification, circulation reference services, and serials control and management; these services are still complemented with manual operations. How the total number of staffs handling these facilities is considered sufficient against the number of available facilities and those using the facilities.

The major challenged being faced by the Library regarding use of ICTs is inadequate funding, although the Library has received grants from external organization like Open Society in Initiative for West Africa (OSIWA) and Education Trust Fund (ETF) on various occasions purposely to develop ICT resources. Lack of funding has resulted into poor maintenance of the equipment.

The Library also faces problems such as vandalism from library users. This has prompted the Library to establish a code of conduct regarding the use of the e-library. Furthermore, the Library conducts regular orientation programs to impart IT skills in the users. In order to maximize use of the e-library resources, the following rules of been introduced:

- Rotational Use of ICT facilities (users are restricted to...)
- CD-ROM, diskettes, flash drive and other storage devices are not allowed in the ICT room until further notice
- Users are not allowed to tamper with any of the system whenever it is not responding
- Users are not allowed to print any document without the assistance of the ICT staff
- One user is allowed to use one ICT facility at a time
- Online chatting is not allowed

Conclusion

This study has established that Internet is most used ICT facility at the University of Ilorin Library. The major factors contributing to poor use of the ICT facilities is lack of awareness of the existing facilities/resources and poor ICT skills. Other major challenges being faced the institution with regard to the provision of ICTs include inadequate funding, frequent power failure, insufficient ICT staff, lack of ICT support, inadequate ICT equipment (PCs), low seating capacity in the e-library room, and poor maintenance of equipment. Despite these challenges, users are optimistic that the e-library resources have a bright future in the academic life of the institution.

Recommendations

In order to overcome the above challenges, this study recommends the following measure. The University must increase funding for improved ICT infrastructure. The University management should ensure that current approved 10% budgetary allocation to the University Library should be disbursed and carefully monitored for judicious utilization. Library automation should be accorded the highest priority. Furthermore, alternative power supply (e.g. solar power) should be provided to alleviate the adverse effect of power outage. Finally, in order to improve ICT literacy levels among students and other library users, the University must increase training opportunities through institutionalized academic courses.

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The Impact of Reading Rooms on Literacy Development: A Case of Selected Basic Schools in Chongwe District

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Abstract

The purpose of this study was to investigate the effects of Reading Rooms on literacy levels among basic school pupils in Chongwe District. This study employed a mixed study design. A mixed study design is useful to capture the best of both qualitative and quantitative approaches and reduces biases (Cresswell, 2003). The study adopted a case study strategy of inquiry so as to maximize what could be learnt in the period of the time available for the study. Case studies are a strategy of inquiry in which a researcher explores in depth a program, event, activity, process, or one or more individuals. Cases are bound by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Stake, 1995). Data was collected and analysed using both qualitative and quantitative methods (triangulation) in order to study the phenomenon from more than one standpoint (Cohen, Marion and Morrison, 2007).

A sample of 210 respondents purposively and randomly selected were involved in the generation of data to answer the following issues: the role of library resources in promoting literacy skills among pupils, the effect of Reading Room activities on pupils reading culture; and the performance and challenges of pupils on the literacy program. Findings showed that Reading Rooms had a positive bearing on pupils reading achievement and ultimately academic performance. Further, the study established that Reading Room activities inculcated a reading culture in pupils and enhanced their literacy skills. Statistical findings revealed that Reading Rooms contribute to academic achievement particularly in reading literacy in basic school pupils. Salient challenges included: lack of funding, negative attitude by teacher librarians, insufficient time allocation and small size of Reading Rooms. It was recommended that the Ministry of Education, Science, Vocational Training and Early Education should build more school libraries, allocate more funds and train more teacher librarians.

INTRODUCTION

1.0 Overview

Literacy is a human right, a tool of personal empowerment and a means for social and human development. Educational opportunities depend on literacy. United Nations Educational, Scientific and Cultural Organization (UNESCO, 2006) defines a literate person as one who has the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials

associated with varying contexts (Education For All Global Monitoring Report, 2006). In spite of many definitions of literacy, this study is rested on the following definition:

Literacy is more than to psychologically and mechanically dominate reading and writing techniques. It is to dominate those techniques in terms of consciousness; to understand what one reads and to write what one understands: it is to communicate graphically. Acquiring literacy does not involve memorizing sentences, words or syllables--lifeless objects unconnected to an existential universe—but rather an attitude of creation and re-creation, a self-transformation producing a stance of intervention in one's context (Freire, 1973).

All over the world, libraries are dedicated to providing free and equitable access to information for all, be it in written, electronic or audiovisual form. They play a key role in creating literate environments and promoting literacy by offering relevant and attractive reading materials for all ages and all literacy levels. They embrace the social responsibility to offer services that bridge social, political and economic barriers, and traditionally make a special effort to extend their services to marginalized people. Librarians assist in finding, using and interpreting appropriate information that opens up opportunities for lifelong learning, literacy enhancement, informed citizenship, recreation, creative imagination, individual research, critical thinking, and ultimately, empowerment in an increasingly complex world (Krolak, 2005).

School libraries are an integral part of the institutions they serve. As a storehouse of information or a record of human experience to which students, academic faculties, and researchers may turn for data or information, the library stands in the same relationship to the society as the memory to an individual by making available and accessible to its users information resources needed for teaching and for students' independent study. By offering instruction in the use of library and bibliographical resources, the library participates in the transmission of knowledge. Librarians play a central role of critical importance in the instructional and scholarly life of the schools they serve (Aguolu, 1983).

Whilst education is being given a high priority by the government of Zambia, and while educational opportunities for young people are rapidly expanding, the fact remains that most schools in the country do not have libraries (Lungu, 1985; 1990). At the same time, while in recent years the Zambia Library Service has continued to expand its services, most rural areas are lacking library facilities.

1.1 Background to the Study

Room to Read was founded by John Wood when he visited Nepal in 2000. Room to Read is a non-profit making organisation that partners with local communities throughout the world to establish school libraries and other educational infrastructure. Room to Read believes that the habit of reading and literacy are essential to the educational success of children. The literacy program principally aims at establishing school libraries. The program provides schools with books and other learning materials, trains teachers and librarians, and works with school administrators to create time in their schedules for library and reading periods.

Prior to the implementation of the Reading Rooms in Chongwe District of Zambia, Room to Read Zambia conducted a Baseline Survey in 2008. The findings revealed a school situation of erratic access to few books. The survey indicated that there were only 650 books for 8591 scholars in 12 schools in the District. This was far below the recommended number of books. Libraries in the classical and formal sense did not exist in schools. No organisation provided full-fledged reading programmatic support to schools. This explains why there was little knowledge on Libraries and Library training (Room to Read Zambia, 2008).

Another challenge was illiteracy in the lower grades. Out of 36 pupils, 17% indicated that they did not know how to read. Pupils read very little in Chongwe District Schools mainly due to non-availability of story books and absence of libraries in the formal and classical sense. The Primary Reading Program (PRP) was the main reading program in schools in Chongwe, though it was greatly hampered by inconsistent supply/replenishment of reading kits. The Reading Rooms Literacy Program started as an intervention mechanism to enable pupil's access print materials, motivate librarians and teachers and establish child-friendly libraries in primary and secondary schools (Room to Read Zambia, 2008).

1.2 Problem Statement

The Reading Room Literacy Program set off with goals and objectives to be attained. Nevertheless, from the inception of the Chongwe Reading Rooms, there is no known record of a follow up on how they are promoting literacy. We do not know the impact the Reading Rooms have had on literacy levels of basic school pupils in Chongwe District.

1.3 Purpose

In view of the foregoing, a study was undertaken to investigate the effect of the Reading Rooms on literacy levels of basic school pupils in Chongwe District.

1.4 Objectives of the Study

The study was guided by the following objectives:

1. to find out the role of the library resources in promoting literacy skills among pupils;
2. to investigate the effect of the Reading Room activities/literacy events on pupils reading culture.
3. to assess the performance of pupils on the Reading Room Literacy Program ; and
4. to identify the challenges faced by pupils on the Reading Room Literacy Program.

2.0 METHODOLOGY

The study adopted a mixed design (triangulation) to capture the best of both qualitative and quantitative approaches and reduce on biases. The concept of triangulation is based on the recognition that any method used on its own has limitations and biases which could be reduced by employing triangulation (Cresswell, 2003). The study adopted a case study strategy of inquiry so as to maximize what could be learnt in the period of time available for the study and further enabled the researcher to explore the phenomenon in-depth. Both quantitative and qualitative methods were used in data collection and analysis to enable the researcher study the problem from more than one perspective. The population of this study included all pupils in selected basic schools in Chongwe

District. This study used a sample size of 210 respondents comprising 4 Officials from DEBS office, 12 Head teachers, 4 librarians, 40 teachers (male and female), and 150 pupils (girls and boys). Both simple random and purposive sampling techniques were used in this study. The DEBS officials, Head teachers and School librarians were selected purposively using expert/key informant sampling. Purposive sampling means the researcher is sampling with a purpose in mind. It targets sources that are rich in information that a researcher needs to gather (Brink, 1996). The researcher used purposive sampling to ensure that only individuals possessing unique experiences and knowledge not shared by the rest were targeted (key informants). Teachers and pupils were randomly selected. Simple random sampling is the most basic process of random sampling.

The data collection exercise was undertaken over a period of six weeks. In order to achieve the study objectives, interviews with District Education Board Secretary Officials and trained school librarians were conducted to solicit information on the Reading Rooms. During interviews, the responses to the questions were written down by the researcher as the interviewees gave their views. Thereafter, data was collected from Headteachers and teachers through open ended questionnaires. Questionnaires were used to elicit their opinions, attitudes and perceptions. Tests were administered to one set of pupils in schools with Reading Rooms and the same tests to another set of pupils in a school that was similar in all respects apart from a Reading Room; i.e. the control group. The difference in scores was taken to mean the impact of the Reading Rooms on literacy development.

Descriptive data was analysed through thematic approach where it was categorized, tabulated and arranged under themes and sub-themes. Quantitative data was analysed using the Social Package for the Social Sciences Software (SPSS) and interpreted as percentages and graphs.

3.0 PRESENTATION OF FINDINGS

3.1 The role of library resources in promoting literacy skills among pupils.

The first objective was to find out the role of reading resources in promoting literacy skills among pupils.

The study findings revealed that access to books and other interesting library resources impacted positively on pupils reading achievement, creativity and development of language skills. From the aforesaid, it can be deduced that provision of interesting library resources play a cardinal role in inculcating positive reading attitudes in pupils. Furthermore, the resources were said to be key drivers in providing rural children the opportunity to engage in independent research; subsequently becoming critical thinkers, better readers and writers. The study also pointed to the fact that reading resources consequently enhanced the learner's communication skills.

On the overall, the study findings indicated that the reading culture of the pupils was rejuvenated. It was said that books and other library resources in the Reading Rooms were essential in the life and development of the child. They stimulate creativity, intelligence and imagination in a child.

Respondents stated that library resources supplemented their class readers and provided a rich resource for teaching and learning. Furthermore, they reported that pupils that participated in Reading Room Literacy activities scored higher in reading achievement tests, improved vocabularies, enhanced written and oral speech. They also revealed that reading resources played

a role of making up for the children's lack of books at home and pointed out that there was a tremendous improvement in terms of academic performance from the inception of the Reading Rooms. The study adduced that access to books and other interesting library resources impacted positively on pupils reading achievement, creativity and development of language skills.

Majority respondents were of the view that library resources supported literacy development in the pupils. A similar picture emerged among some respondents who said that library resources were essential in the life and development of the child. In addition, they claimed that library resources were a stimulus to the intelligence and imagination of library users, an incentive to independent thinking and a source of information and enjoyment. Books and other library resources are indispensable tools in education. The study showed that school Reading Rooms were a fulcrum of literacy development in rural areas.

Besides, the study found that pupil achievement in reading was significantly greater in schools that had Reading Rooms with trained teacher librarians than in schools without them. Goodin (1991) proposition suggests that providing access to books is necessary but not sufficient. The presence of school librarians contributes to developing literacy skills independent of other measures of library quality.

3.2 The effects of Reading Room activities on pupils reading culture

The second objective sought to investigate the effects of the Reading Room activities on pupils reading culture. It emerged from the findings that there were positive attitudes towards reading among pupils from 2008 when the Reading Rooms were introduced in Chongwe District Basic Schools. The study further revealed that most pupils that had challenges in reading and writing had been motivated. Respondents stated that pupils not only changed their attitude towards reading but became lifelong learners and readers. Another interesting finding was that pupils exposed to Reading Rooms read beyond what was required in their free time and were more confident in their reading.

Findings unveiled the fact that the pupils were accorded the opportunity to read voluntarily. For many pupils, the supportive atmosphere of a home which values books and reading is probably not sufficient to ensure that they too will share these values. The study findings indicated that the school library made a unique contribution to the encouragement and development of voluntary reading. Pupils were said to have been given the best opportunity to read.

Respondents further stated that pupils that used the Reading Room more often tended to hold more positive attitudes towards reading than those who seldom do. The study also revealed that the activities of the Reading Rooms motivated, stimulated and provided a literate environment for literacy development. Furthermore, findings indicated that the reading culture of the pupils was rejuvenated.

3.3 The performance of pupils on the Reading Room Literacy Program

The third question sought to assess the performance of pupils on the Reading Room literacy program. In order to answer this question, class tests were administered to both pupils in schools with Reading Rooms and in another school similar in all respects apart from possessing a Reading Room (i.e control group).

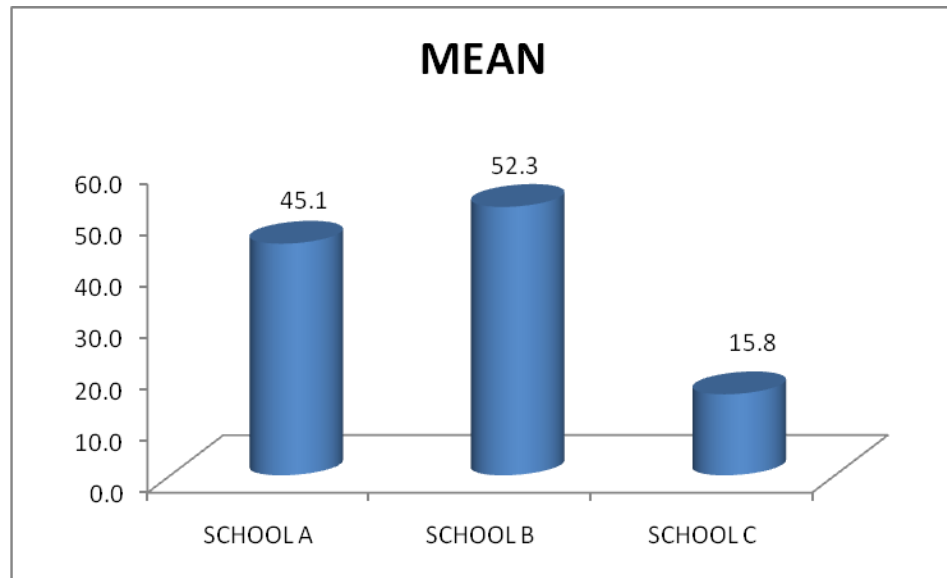


Figure 1: Mean score test results for Basic Schools A, B and C

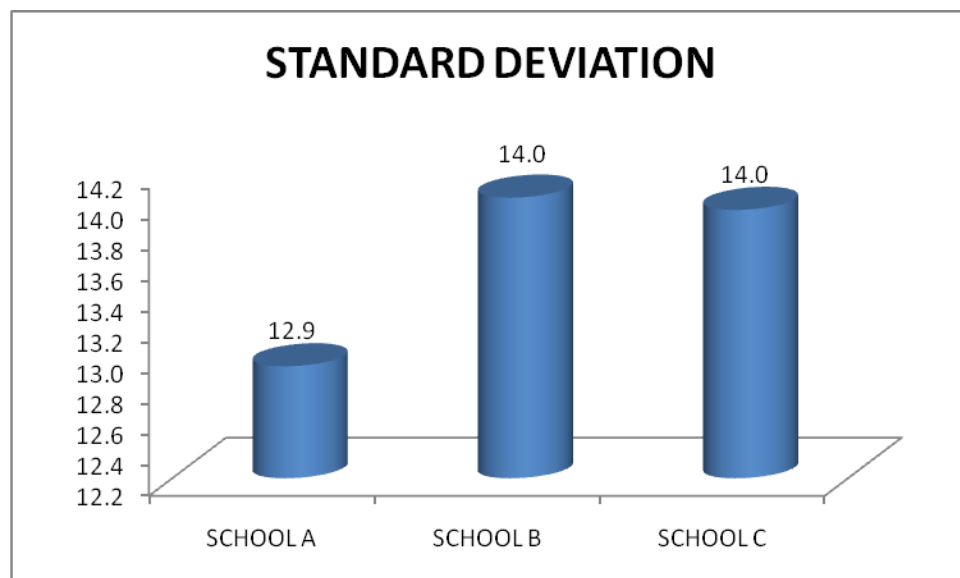


Figure 2: Standard Deviation for Basic Schools A, B and C Test scores

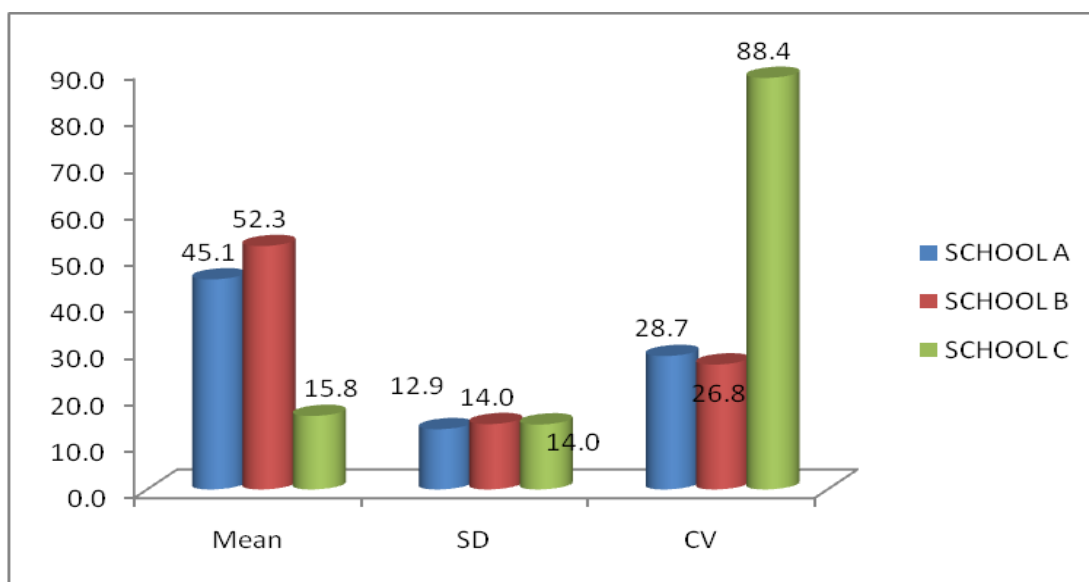


Figure 3 : Mean, Standard Deviation and Coefficient Variance for Basic Schools A and C Test scores

The statistical findings of the study showed that the performance of pupils in schools with Reading Rooms was better than their counterparts who did not have one (i.e control group) in the tests administered. This is evidenced by the Coefficient of Variation which was lower in both schools (A and B) compared to that of the control group (C).

3.4 Challenges faced by pupils on the Reading Room Literacy Program.

The fourth objective was designed to identify the challenges encountered by the pupils on the Reading Room literacy program. The salient challenges revealed by the study were as outlined herein:

- a) Lack of collaboration by class teachers coupled with school librarians' negative attitude. The study revealed that some subject teachers did not encourage pupils to visit the library and discouraged learners from reading widely (engage in voluntary reading and research). In some cases, school librarians were said to be reluctant and lacked the passion to inculcate a reading culture in the pupils.
- b) Insufficient funding of school Reading Rooms. Overall, educational infrastructure is inadequate, but there is also a great disparity between the resources that go to urban schools and meagre supplies available to rural schools. The study revealed that educational resources were lacking as well.
- c) Teacher librarians overwhelming workload was another challenge. The librarians had to juggle between their role as librarians and class teachers. This resulted in teacher librarian's failure to effectively and efficiently perform their main job as librarians. The study established that this situation created an impediment to the cultivation of reading habits in the learners even when there

were good collections available and the school librarian's spirit was willing. Besides, the study also revealed that this trend discouraged pupils from going to the Reading Room to study when they were free; and

d) Small size of Reading Rooms and insufficient allocation of library sessions on class time-tables. Most Reading Rooms were too small to accommodate a full class at once. This finding is contrary to Krashen's (2004) view that accessibility and comfort of a school library are cardinal in the promotion of literacy among pupils.

It was recommended that the Ministry of Education, Science, Vocational Training and Early Childhood Education should build more school libraries, allocate more funds and train more teacher librarians in an effort to reduce on their teaching load. The study recommendations also included the need for school administrators and teacher librarians to provide a wide range of local reading materials and a wide range of activities.

4.0 DISCUSSION OF FINDINGS

4.1 The role of library resources in promoting literacy skills among pupils

It was evident from the preceding study findings that provision of appropriate library resources in an accessible Reading Room with a trained librarian was linked to the development of high levels of reading, writing, listening and speaking skills in the pupils. Subsequently, the pupil's academic performance was enhanced. The school Reading Rooms therefore enhanced literacy skills and ultimately improved pupil's academic performance. The study also established that school Reading Rooms had a positive bearing on pupil's literacy skills development.

The respondent's sentiments justify the fact that school libraries are a potent factor in literacy development. Put together, a clear picture of the impact of school Reading Rooms in literacy development of basic school pupils was depicted.

The study findings tie in with Neuman & Celano (2000) position to the effect that school libraries are in a remarkable position to expose children to great qualities of print and meaningful language opportunities that are crucial to reading, writing, speaking and listening skills. Neuman and Celano also stress that children that participate in the many library activities benefit from the much literacy related activities which aid significantly in literacy development. In a similar view, Neuman et al (2000) contend that the most successful way to improve the reading achievement of children is to increase their access to reading resources.

4.2 The effects of Reading Room activities on pupils reading culture

The aforementioned findings can be supported by Krashen's (2004) argument conforming that recreational reading is the most powerful tool available for language and literacy development. The amount of pleasure reading is a strong predictor of performance on tests of writing, reading, grammar and vocabulary. This requires however that interesting comprehension books and other materials be easily accessible to pupils.

Furthermore, the statistical results confirmed that there was a positive impact/ link between school Reading Rooms and literacy development. Books and other library resources in the Reading

Rooms are essential in the life and development of the child. They stimulate creativity, intelligence and imagination in a child. Put together, a clear picture of the impact of school Reading Rooms in literacy development was depicted.

The aforesaid revelation can be supported by Lance et al's (2004) argument that students who score higher on norm-referenced tests tend to come from schools with more library staff, more books, more periodicals and more videos. Zweizig (1999) concludes that school libraries have a positive impact on student achievement.

4.3 The performance of pupils on the Reading Room Literacy Program

It was evident from the study findings that library provision can contribute to academic achievement particularly in reading literacy in primary level students. The study established that exposure to a rich print environment enhanced pupils reading, writing, listening and speaking skills.

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4.4 Challenges faced by pupils on the Reading Room Literacy Program.

The study finding that there is finding that there is inadequate funding that has resulted into inadequate infrastructure is in line with Makotsi (2004:6) who points out that in many schools that are trying to meet the government targets for Universal Primary Education, there is an acute lack of textbooks, let alone supplementary reading materials. It is common for one textbook to be shared between six or more pupils, and often there are no textbooks at all. Therefore, the challenge for many schools is to create a literate environment when funding is scarce. If a school or children's library exists in a community, it typically has a few books, educational materials or even a library management system in place.

The study also revealed that in some schools, the small size of Reading Rooms and insufficient allocation of library sessions on class time-tables posed as a challenge. Most Reading Rooms were too small to accommodate a full class at once. This finding is contrary to Krashen's (2004) view that accessibility and comfort of a school library are cardinal in the promotion of literacy among pupils.

5.0 CONCLUSION

It was evident from the preceding findings that provision of appropriate library resources in an accessible Reading Room with a trained librarian was linked to the development of high levels of

reading, writing, listening and speaking skills in the pupils. Subsequently, the pupil's academic performance improved. The school Reading Rooms therefore had a positive impact on pupil's literacy skills and ultimately improved their academic performance.

The study also concluded that Reading Room activities/events were meaningful, relevant and purposeful because they enabled pupils discover the joy of reading and writing. The pupils reading culture was rejuvenated. Consequently, a significant general improvement in reading, comprehension and writing skills had an impact on learning and performance in all the other curriculum subjects.

The study established that pupil achievement in reading was significantly greater in schools that had Reading Rooms with trained teacher librarians than in schools without them. The findings also revealed that in schools with Reading Rooms, pupils listening, writing, speaking and reading skills were greatly enhanced.

Furthermore, the study findings confirmed that there was a positive impact/ link between school Reading Rooms and literacy development. It was also evident that there was a positive relationship between school Reading Rooms and academic performance.

The above sentiments justify the fact that school libraries are a potent factor in literacy development. Put together, a clear picture of the impact of school Reading Rooms on literacy development among basic school pupils was depicted.

5.0 RECOMMENDATIONS

In view of the findings of the study, the following recommendations have been suggested:

1. Government through the Ministry of Education, Science, Vocational Training and Early Education should build more school libraries especially in the rural parts of the Country;
2. Government through the Ministry of Finance should allocate funds for school
3. libraries;
4. Government through the Ministry of Education, Science, Vocational Training and Early Education together with school administrators ought to train and re-train school librarians in an effort to reduce on their teaching load.
5. School administrators and teacher librarians must endeavour to provide a wide range of local reading materials and a wide range of activities.

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Acknowledgements

We wish to acknowledge with gratitude the assistance and contributions of the following organisations and individuals: The Norwegian Government for their award of the NOMA scholarship which made this study a success. The District Education Board Secretary (Chongwe), all the members of staff in the Department of Languages and Social Sciences Education at the University of Zambia.

Establishing an Institutional Repository at the University Of Zambia Experience and Challenges

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Abstract

The IR was established as a new way to disseminate UNZA's research output. However, the establishing and implementation of this institutional repository has been surrounded by a number challenges which this paper has brought out. The challenges include lack of awareness, unwillingness to submit, lack of IR, phobia for open access. The purpose of this survey was establish the reasons why faculty were reluctant to deposit their work in the Institutional Repository and also highlight the challenges faced by the Library in establishing and implementation of the institutional repository at University of Zambia and how these challenges were overcome.

Introduction

Research excellence of any university is measured by evidence of how much research is going on in that institution. A lot of research is carried out by University of Zambia staff but this research output is disjointed and not much is disseminated globally apart from the few published in international journals. For any learning institution to improve its profile and rating globally, its research results need to be effectively distributed, making them accessible and for use by other scholars. UNZA lags behind in the world university ratings due to limited evidence of its research activities. It is against this background that a way to disseminate this intellectual output was put in place in order to make known to the world what UNZA has to offer. The UNZA institutional repository, therefore, is intended to assist researchers by facilitating the production, use and dissemination of their intellectual output.

According to Lynch (2000), a repository is "a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members". Digital repositories offer possibilities for new ways to publish and share information. Lynch (2000) further argues that "research paid with public money, should be made available to the broadest public possible and an institutional repository makes that possible".

The University of Zambia (UNZA) being an institution mandated to create knowledge through conducting research, has developed a research policy to promote research dissemination in many ways including, establishing mechanisms for data processing, information storage and retrieval systems and ensure that the creative research outputs are reviewed and communicated widely. The University of Zambia Library has since taken up the challenge to establish and implement an institutional repository that will help to fulfill the implementation of this policy.

This paper, contends that though a lot of research is carried out by University of Zambia academic staff and students most of its unpublished research output is not visible or accessible and not much is disseminated globally. This scenario has had a negative impact in terms of profiles and rankings for University of Zambia. The researchers strongly believe that UNZA's low rating has a lot to do with limited visibility of its research activities on the global scene, since some of its research output is not published in international journals. It is against this background that a way to disseminate this intellectual output has been put in place in order to make known to the world what UNZA has to offer.

Statement of the Problem

One year after establishing the Repository, and despite some effort to publicize its existence, not many members of the faculty have submitted their work in the IR. This paper therefore, highlights issues surrounding the willingness by faculty to buy into the IR concept and also some of the challenges faced by the Library in the establishment and populating of the IR. Others have to do with copyright issues and just the phobia by both academic staff and students of accepting the open access concept and open up materials that have been kept under lock and key for a long time.

Literature Review

An institutional repository (IR) is a ``digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside of the institution, with few if any barriers to access (Crow, 2002).

Despite its potential value to the academic community, a study by Chawner (2010) academics indicate that academics have been slow to embrace the concept of institutional repositories, and show little interest in using repositories for increasing the accessibility of their own work, or to access the work of others. The number of deposits remains low, mirroring patterns throughout the world.

Among other factors of the slowness to embrace the concept of IR, were the ongoing concerns about copyright and plagiarism (Westell, 2006). Chawner (2010) also adds that the academic community has not yet been persuaded to overcome its reluctance to deposit, and repository staff indicated that their academics remain concerned about plagiarism and intellectual property rights (especially their right to deposit, post publication)

On the other hand, there is also evidence of some positive attitudes to repositories, and some studies show that not only do academics favorably disposed to repositories declare a willingness to deposit in order to enable other scholars to find, use and cite their work (bringing a personal and institutional benefit), but that some have a more altruistic attitude, are in agreement with open access policies and principles, and believe that knowledge should be openly shared and that publicly funded research should be made publicly available. A study by Sawant (2011) reveals that about 92.86 % of respondents felt that the implementation of the IR enhances their institution's prestige/visibility.

Anticipated benefits of institutional repository are listed in Sawant's study include:

- Enhances your institution's prestige/visibility
- New services to learning communities beyond your institution
- Maintaining control over your institution's intellectual property
- Capturing and maintaining the intellectual assets of your institution
- To encourage open access
- A reduction in the amount of time between discovery and dissemination of research findings to users scholarly communities

The study further reviewed that some of the challenges included the following

- Contributors' lack of knowledge about how they can benefit from IRs
- Lack of on campus technical expertise in IR systems
- Contributors' concerns about intellectual property rights for digital materials
- Absence of campus-wide mandates regarding mandatory contribution of certain material types, e.g. doctoral dissertations, master's theses, etc.
- Competing for resources with other priorities, projects, and initiatives

In countering the negative attitude of the academics, promoting the repository with faculty is identified as crucial factor. It requires that librarians tirelessly promote the IR. Westell (2006) recommends that the goals for the repository should be aligned with institutional academic plans. She further explains that beginning in May 2005, the National Institutes of Health (NIH) had done just that, mandating that all NIH-funded research be archived in PubMed Central (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-05-022.html>). Policy therefore compels the faculty to deposit their work in the repository.

Objectives

This study sort to meet the following objectives:

- Establish the reason why members of the faculty are reluctant to deposit their work in the IR
- To highlight some of the challenges experienced during the establishing and implementation of the institutional repository at University of Zambia and how these challenges were overcome.

- To share the findings/experiences with some of the universities which are in the process of establishing institutional repositories

Methodology

This study utilized face to face interviews with selected academic members of staff who have had an experience of using the repository. Questionnaires were also be administered to 200 lecturers and 30 randomly sampled graduate students to supplement the views gathered from the academic staff about the positive and negative experiences they have had in using the IR.

The questionnaires used were open and closed-ended questions. Open ended questionnaires were suitable for the study because they helped the researchers to collect data from a large number of respondents in the shortest possible time. Closed-ended questions helped reduce the possibility of obtaining ambiguous answers from the respondents and also helped the researchers obtain straightforward answers. On the other hand, a few open-ended questions allowed the respondents to include any vital information that could be left out in the closed-ended questions.

The data that was collected from the respondents coded and analyzed using the Statistical Package for Social Sciences (SPSS) software to have accurate analysis. The open-ended questions were also analyzed using content analysis in Excel to allow patterns to be identified.

Results

The findings that prominently came out were that the slowness in populating the IR was due to inadequate bandwidth (68 %) which made it difficult for the University to support the accessibility of the IR via Internet, lack of interest (51 %) by the university community to take steps in self archiving of their research work, lack of adequate technical staff (62 %) who sometimes seem to be overwhelmed by so many responsibilities rather than those to do with the IR, poor publicity by library staff responsible for IR. Lack of adequate computers (46 percent) in school laboratories for those students with no personal computers to access the IR contents.

Awareness

The study revealed that awareness of the concept of institutional repositories was quite low amongst the faculty. Asked whether they were aware of the existence of the IR at the University of Zambia, the 68% of the academic staff interviewed mention that they were not aware. This meant that this unawareness could have contributed to not submitting to their research output the IR. On the other hand, awareness among students was higher as the majority of the students (70%) indicated that they were aware of its existence. This meant that it was more likely that most students knew about the IR as compared to academic staff because students visited the library more often than staff thereby noticing new services in the library.

Willingness to deposit

When asked how willing academic staff were to submit their research work in the IR, 67% of the respondents were not willing to submit for various such as not being sure of what will happen to their work after submission.

Reasons for unwillingness

Most of the academic staff interviewed indicated that they would have been submitting more if there was some form of policy to compel them to submit, 62% mentioned that they needed more training on how to submit while 43% of the them indicated that they would not want students to plagiarize their work if put on open access facility without copyright. Interestingly 10% of the respondents indicated that they did not have any work to submit.

The results therefore indicate that there is need for the Library and champions in the University to educate the community on the issue of open access and publishing. The open access movement argues that publicly funded research should be made available for free to anyone who needed it.

Challenges in Implementing the Institutional Repository at UNZA

The major challenges faced in the establishment and implementation of the University of Zambia Institution Repository include:

1. Lack of IT expertise stationed in the library
2. Lack of clear understanding by the ICT department on the role and value of the repository
3. Not adequate bandwidth which up to now can allow the IR to be accessed on Internet
4. The University management's bureaucracy to approve the IR policy
5. Inadequate funding for the Library to acquire enough machinery for scanning
6. Inadequate staff dedicated to digitize materials

Recommendations

The researchers have recommended that the library should come up with a feasible plan or programme to market the IR among the university community members. Secondly, the university management should consider acquiring more bandwidth to cater for the open access facilities and services such as the IR. Another suggestion is that more technical staff both librarians and ICT personnel to be trained in order to smoothly manage the IR. It is further suggested that the IR manager and staff should find ways of convincing university staff and student to adopt a new culture of archiving and preserving their work electronically in the IR. Last but not least, there should be an IR policy to act as a guide in day to day running of an IR. The policy must clearly address pertinent issues such as copyright, funding, staff responsibilities etc.

Conclusion

Changing the culture of scholarly communications is not an easy job and uptake remains slow in the academy. Many repositories are using the "if you build it, they will come" philosophy. Through

developing the infrastructure and encouraging early adopters, a critical mass of content will attract other researchers and illustrate to administration how the repository will meet institutional needs.

The challenges experienced during the establishment and implementation of an IR at University of Zambia were presumably common to many institutions implementing of IR especially in developing world. Problems such as inadequate bandwidth, lack of IT skills to manage IR, lack of funding, phobia for OA among academic staff etc. All these, however, could be overcome by convincing management and make it understand the importance of IRs in information management & retrieval.

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