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Adoption and Utilisation of Integrated Library Management Systems in Ghanaian Academic Libraries

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Abstract

Academic libraries in Ghana have adopted integrated library management systems (ILMS) to enhance efficiency and to deliver electronic service which is the current trend in the 21st Century. This study investigated the extent of use of ILMS using a qualitative approach in nine academic libraries in Ghana. Findings revealed that all the libraries studied adopted ILMS as individual libraries but are not making optimum use of the ILMS and also there is a general shift towards open-source ILMS with Koha as the preferred choice. The study recommended collaborative approach in the adoption of ILMS with adequate attention to training.

Keywords: Academic Libraries, Integrated Library Management System, Library Management Systems Integrated Library System, Ghana, ILMS

Introduction

Library Management Systems (LMS), Integrated Library Management Systems (ILMS) or Library Service Platform (LSP) are application software used to automate and integrate different library functions related to acquisition, cataloguing, circulation, administration, user management, inter-library interactions, serials management indexing and Online Public Access Catalogue (OPAC) (Kouzari and Stamelos, 2018 and Zainab *et al*, 2018). Academic libraries started using these systems in the 20th Century and they have evolved and expanded to integrated, intelligence and cloud based solutions in the 21st Century (Makori and Mauti, 2016; Pace, 2009; Tyagi and Senthil, 2015; Machovec, 2014; Pruett and Choi 2013; Wang and Dawes, 2012; Kinner and Rigda, 2009; Pace, 2009; Reitz, 2004). The advanced forms of these systems enable libraries to manage their electronic resources and link to other databases, are hosted in the cloud (Cho 2011, Breeding, 2012, Giri 2012, Fu and Fitzgerald 2013, Yang 2013, Madhusudhan and Singh, 2016 and Tyagi and Senthil, 2015), which enable collaboration (Machovec, 2014).

Academic libraries provide well organised information resources and services that support the academic community to acquire knowledge, impart knowledge, investigate problems and provide extension services in universities. They are regarded as warehouse of organised information. The information resources of academic libraries are therefore regarded as strategic resources which serve as foundation for the development of curricula (Makori, 2013). To perform their role in academia effectively in the digital age, academic libraries need to perform their traditional roles of acquisition and distributing of information for scholarly purposes with electronic tools. Digitisation of academic library services will enhance information delivery and make academic information accessible to academics and members of the general public nationally and

internationally (Iwhiwhu and Eyekpegha 2009) and become more relevant (Wasike and Njoroge, 2015). This makes the use of ILMS in academic libraries essential.

Statement of the Problem

Academic libraries worldwide have adopted the use of ILMS to enhance their service delivery. The use of ILMS form part of the technological projects of libraries (Guimaraes *et al*, 2021). This has become the norm in Ghana also with the adoption of a wide range of ILMSs in academic libraries for library automation activities. To enhance the efficiency and effectiveness of ILMS use in academic libraries in Ghana, researchers need to investigate the extent of use in order to identify usage gaps and make recommendations. Unfortunately, this has not been the situation in Ghana as not much research attention has been paid to the use of ILMS. There is also evidence of failure of such applications in many organisations (Marnewick, 2017). Though Amekuedee, (2005) and Boateng *et al.* (2014) studied the automation process in some Ghanaian academic libraries, their works did not reveal the actual extent of use of the ILMS adopted. The aim of this research is therefore to investigate the extent of use of the ILMS that have been adopted by academic libraries in Ghana.

Objectives of the Study

The study seeks to achieve the following objectives by determining the:

- functions ILMS used to perform in academic libraries in Ghana
- extent of utilisation of ILMS in academic libraries in Ghana
- reasons for adopting particular ILMS in Ghanaian academic libraries
- benefits of ILMS use in academic libraries in Ghana.

Theoretical Framework

The DeLone and McLean (2003) Information System Success Theory was adopted as a theoretical framework within which the study was situated. According to the developers of the theory as depicted in *Figure 1*, quality of an information system determines the use and user satisfaction and that people use an information system in order to obtain benefits from it. It is only through actual usage that user satisfaction is derived and the benefit of use is attained. Though the actual intent of Delone and McLean, (2003) is to use the theory to measure the success of information systems, the researchers adopted this theory as it will help achieve the objectives of the study which are to determine the extent of use and the benefit gained from the use of ILMS.
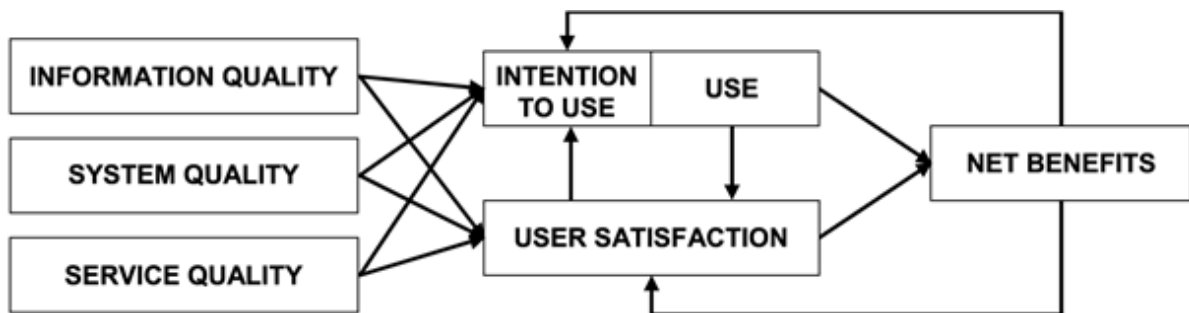
Source: DeLone and McLean (2003)

Figure 1: The DeLone and McLean IS Success Model

Literature Review

In the developed countries, library automation started in the early 1960s and journals such as *Program and Vine* were designed to serve as a source of documentation of the automation projects across the libraries. ILMS application in academic libraries in the developed world is at a very advanced stage. As far back as 1990, library circulation systems were fully automated and allowed self-service to help libraries save cost and users' time (Morris *et al,* 2001); Tedd, 2006). ILMS in developed countries started as trial in-house ILMS to the 21st Century robust cloud base systems (Kinner and Rigda, 2009, Groenewegen, 2004). One major trend that is noted in the application of ILMS in libraries in developed countries is the emergence of library consortia to help in the development of ILMS for member libraries as single projects. This enabled the use of common ILMS in member libraries across developed countries (Machovec, 2014 and Cannell and Guy, 2001). The ILMS used in these developed countries was developed single interface for the discovery of diverse resources opening up library data to non-library applications allowing faceted browsing Warren (2007); and are linked to the learning management systems of universities for better patronage (Bell, 2016; Cross, 2015; Detterbeck and Sciangula, 2017, Black and Blankenship, 2010). Studies from these developed countries; Australia, America, United Kingdom and Netherland show that libraries from these countries have moved from the use of ILMS that manages the resources of only a particular library to library service platform that combines the functions of resource sharing, from discovery through to delivery. A Library service platform offers users the ability to use library resources from any location (Evans and Thomas, 2007 and Froud, 2006).

Tyagi and Senthil, (2015) investigated library automation in India by assessing library services platforms through exploratory research. Their findings indicated that library automation in India is at an advanced stage where most libraries have automated various library activities; particularly the web based Online Public Access Catalogues (OPAC) and union catalogues development. A study conducted by Kumar and Biradar (2010) shows that only three out of 31 college libraries in India were fully automated, and eight others were at different stages of automation. The acquisition, cataloguing, circulation, serial control modules of ILMS are being used. Also, Husain and Nazim (2015) conducted a survey on the use of ICT in Indian libraries soliciting responses from librarians to indicate the specific uses of ILMS in the libraries. Results indicated that 85% of the libraries had automated library catalogues, circulation systems and serial control while, 75% are using ILMS for acquisition and budgeting. This confirms Kumar and Biradar's (2010) finding of the services offered with ILMS in India. Easylibsoft, Library Manager, E-Lib, SOUL and Profit+ are among the ILMS being used. Cho (2011) studied the use of cloud service as a means of hosting ILMS and found that they are widely used in Japan, India and other countries and helps libraries reduce cost on hardware and servicing.

Thailand, like India, has had its fair share of ILMS use in its libraries since the 1980s, where the first ever library software to be installed was CDS/ISIS. Apart from CDS/ISIS, some university libraries have installed proprietary ILMS such as URICA, Dynix, INNOPAC, ALICE, TINlib, VTLS classic. One major trend in the use of these commercial ILMS is to provide links to e-resources (Siriwongworawat, 2003). In Pakistan, Siddique and Mahmood (2015) intimated that Pakistan libraries were engaged in automation practices as early as 1968 mainly for cataloguing and inventory; a small number of academic libraries computerised their circulation service at that time. Ramzan (2004) notes that, with regard to library management system in academic and research libraries in Pakistan, 24% of libraries use in-house developed software, 22% use software that were donated, and 23% use proprietary software, and 70% use Library Automation and Management Program (LAMP), CDS/ISIS, and WINISIS, which are free and sponsored by UNESCO and not ILMS. Siddique and Mahmood (2015) expanded the list of the library management systems use in Pakistan to include, dBase, Foxpro, INMAGIC, MINISIS, KITABDAR, Pak Library Software, and Management System, Library World, LIMS, MLIMS, Sci-Mate, and VTLS VIRTUA. Siddique and Mahmood (2015) are however of the view that the different library management systems used by Pakistan libraries do not have local standards and do not provide complete solutions to managing

libraries. Ramzan and Singh (2009) also noted that only a handful of the libraries in Pakistan at the time of their study were fully automated. Though about 50% of the libraries had OPAC, most of them were internal and not web based.

In Nigeria, Bassey, (2016) revealed that the extent of automation in university libraries in Nigeria was 75%; partially automated, 20% are not automated at all and 5% are fully automated. Omeluzor and Oyovwe-tinuoye (2016) also indicated in a study in Nigeria that among eight libraries, only three of the universities had automated their services by using ILMS namely, SLAM- proprietary software and Koha open-source software. The two software were used for retrieving records of library materials but Koha has the feature to link to external databases. Though Omeluzor and Oyovwe-tinuoye (2016) studied university library automation in just one state of Nigeria whereas Bassey, (2016) studied the whole of Nigeria, both studies revealed that there are still some academic libraries in Nigeria that have not adopted ILMS. This finding corresponded with those of Ani *et al.* (2005) who investigated the extent of adoption of ICT in seventeen Nigerian university libraries and revealed that only six of the seventeen libraries were fully using ILMS to provide traditional library services, while five provide access to OPAC. TINLIB was the most popular library software used in Ani *et al.* (2005)'s study. Kari and Baro, (2014) also conducted a survey of all Nigerian libraries that have been using ILMS. KOHA came top of the ILMSs use followed by SLAM and VIRTUA in these libraries. The ILMS was used for cataloguing, OPAC, serials, acquisitions and circulation, collation of staff research output and managing patron records.

Stilwell and Hoskins (2012) embarked on a comprehensive study of library management in South Africa. The major library management systems used in academic libraries were enumerated as Millennium, ALEPH, SirsiDynix and INNOPAC. University libraries in South Africa adopted the above named systems for varied reasons, including, versatility, effective back up, round the clock help from vendors, visit by vendors to undertake major system upgrades, affordability, ability to be web based and extent of adoption by other South African institutions. Stilwell and Hoskins (2012) did not indicate exactly how these systems are used or what

they are used for as was done by other researchers in other countries like India, Pakistan and Nigeria.

From the literature, the researchers observed that libraries across the globe have engaged in the use of different ILMS/LMS either based on what is available in their countries or the needs of their libraries. The developed countries have gone beyond using ILMS for cataloguing and circulation to using library services platforms. South Africa, Thailand, Japan and India are trying to catch up with the pace of developed countries but in general, most libraries in the developing countries are not fully utilising all the modules in ILMS that they have installed. The basic functions of acquisition; cataloguing, circulation and OPAC are the most used modules in the ILMS installed and not much was reported on library service platforms.

Proprietary and Open-Source Library Management Systems

The library management systems discussed above come as free software known as open-source library management systems or as proprietary software which libraries have to purchase from vendors. As noted by Upasani (2016:121) 'the present market for ILMS encompasses the spectrum from proprietary systems to open-source software (OSS) systems with a variety of hybrid and customised solutions in between'. Library management systems started as custom-developed home grown or proprietary systems and had very few features. They were used to serve specific needs of libraries. Because the customer base of proprietary library management systems is limited, vendors are able to offer full-service packages of customisation, maintenance, and support. They are expensive, lack flexibility for interoperability with other library management systems, frequent expensive updates force libraries to truncate their subscription and adopt OSS library management systems (Upasani, 2016); the adoption of OSS by libraries for cost reason was also stated by McGarvey (2018).

Open-source software (OSS) has advanced from small based projects to well-funded ones with the involvement of a number individuals/institutions. OSS application in libraries is not a misplaced priority, as both libraries and OSS organisations have the aim of achieving the same end, namely providing

information to aid learning. In the current era of budget cuts in libraries coupled with increasing cost of resources, OSS has served as a great means for libraries to embark on automation activities in a cost-effective manner to meet economic challenges. OSSs are alternatives to proprietary systems and are characterised by free access and an open source code through the programming code which is made publicly available to allow modification of software by the user (Pruett and Choi, 2013). OSSs have the possibility of being opted for by most libraries (Balnaves, 2008). Koha has been identified as the first OS ILMS and the most used compared to others like Evergreen integrated library system, OpenBiblio, PhpMyLibrary, and Emlida with very few user subscriptions (Giri, 2012; Balnaves, 2008). Others listed by Singh and Sanaman (2013) are Avanti MicroLCS, Gnuteca and PhpMyBiblio. Despite the advantages associated with OS ILMS, their adoption by UK libraries, for instance, has been slow (Coyle, 2002; Dalling and Rafferty 2013) but Australia has apparently adopted specific OS ILMS (Keast, 2011). Koha and Evergreen were listed by Breeding (2016) as being used in US academic libraries. In developing countries the use of open source is quite rampant notably in Pakistan (Siddique and Mahmood, 2015), Nigeria (Otunla and Akanmu-Adeyemo, 2010), Kenya (Makori and Mauti, 2016), Uganda (Ponelis and Adoma, 2018), Zimbabwe, Malawi and Mali (Mutula, 2012).

The different studies indicate that the open source ILMS have well developed models and support cloud services. Though they lack certain features, they compare quite well with proprietary ILMS. Libraries everywhere are adopting them, and in the developing countries, the availability of OSS is making it even easier for the adoption of ILMS in libraries due to financial restraints and budget cuts.

Methodology

The study adopted qualitative research design. Qualitative research design helps the researcher to discover and understand the experiences of participants in their real world (Harwell, 2014). This approach is deemed best for this study as it enabled the researchers use interview to best understand the experiences of the librarians in the use of ILMS.

The population of the study is university library members of the Consortium of Academic and Research Libraries in Ghana (CARLIGH). This is made up of 8 public universities and 22 private universities. Being a small population, Durrheim and Painter (2006) recommend 30% to be used as sample size. This gives a sample size of 9 academic libraries.

The sample size was proportionately divided between public and private universities; 2 and 7 respectively. The participating libraries were then purposefully selected base on expert knowledge (Battaglia, 2011) that the libraries use ILMSs.

Structured interview guide was used to conduct interviews with the head of each library selected. This was to enable the researchers ask each respondent the same set of questions. The interviews were recorded using an audio recorder.

The recorded interviews were transcribed using Microsoft word. The audio was played three times to ensure the transcription was accurately done. The transcribed documents were uploaded on to Atlas.ti. The uploaded documents were assigned identification codes. The documents were read for interpretation by identifying key themes that recur across different respondents. Theme codes were generated to help bring together the various comments from different respondents on the same theme. This was used to determine the frequency of occurrence of themes and to identify interesting quotes.

Findings and discussions

Use of LMS/ILMS

The interviews with head librarians revealed that all nine (100%) libraries used an ILMS. The ILMS was installed between the period of 2009 and 2016. The brands used include Sierra by one library (11.1%), Destiny by three libraries (33.3%), Librarysoft by four libraries (44.4%), Koha by seven libraries (77.8%) and Alexandria by one library (11.1%) (Some of the libraries were using two types of ILMS at the same time). See Table 1 for detailed responses.

Table 1: ILMS use (N=9)

Themes	Responses
Sierra	**Librarian 1 -** *We use the ILMS Sierra*
Destiny	**Librarian 2 -** *Destiny library manager is used* **Librarian 4 -** *Koha is used currently, formally Destiny* **Librarian 5 -** *The library is using Destiny software which is currently migrating to Koha.*
Librarysoft	**Librarian 3 -** *We have Librarysoft, it is extremely frustrating so we just implemented Koha about a month ago* **Librarian 6 -** *We are using Librarysoft* **Librarian 7 -** *Before Koha we were using Librarysoft* **Librarian 8 –** *We initially subscribed to Librarysoft*
Koha	**Librarian 3 -** *We have Librarysoft, it is extremely frustrating so we just implemented Koha about a month ago* **Librarian 4 -** *Koha is used currently, formally it was Destiny* **Librarian 5 -** *The library is using Destiny software which is currently migrating to Koha.* **Librarian 6 -** *Owing to the challenges with Librarysoft we have done consultations and have decided to use Koha.* **Librarian 7 -** *Before Koha we were using Librarysoft* **Librarian 8 –** *We use Koha* **Librarian 9 -** *we are currently in the process of rolling over our newly adopted software; Koha*
Alexandria	**Librarian 9 -** *We are using an ILM; Alexandria*

Purposes for Adopting ILMS for Library Services

In determining the aim of adopting an ILMS, the most cited purposes were to enhance service delivery and quick and easy work procedures (four (44.4%) responses each) and lastly to computerize library work procedures (two (22.2%) responses). Specific responses provided are in Table 2.

Table 2: Purpose of ILMSs use (N=9)

Themes	Responses
Enhanced service	**Librarian 3** – *ILMS and other systems will enhance the services we provide in this library* **Librarian 4** –*The use of Koha is for enhanced services* **Librarian 8** – *Enhance our services* **Librarian 9** – *To automate the library procedures to help serve our users better.*
Fast and easy work procedures	**Librarian 1** – *The use of the systems comes with a number of advantages such as easy work procedure and speed; that is why we are using them* **Librarian 5** –*To help the university library to automate its functions* **Librarian 6** – *To support our work for efficiency* **Librarian 7** – *The library decided to use the systems for fast and easy retrieval of information*
Automation	**Librarian 2** – *It will help automate all our library functions* **Librarian 9** – *To automate the library procedures to help serve our users better.*

Change of ILMS/ILS

In response to questions on whether the libraries had ever replaced an ILMS and the factors that led to the replacement, eight (88.9%) head librarians indicated they had changed their ILMS. Out of the eight libraries which changed their ILMS, six (75%) of them changed from proprietary software to Koha, an open-source software. At the time of the study, two (22.2%) more libraries were at the consideration stage of changing their ILMS. One of them is considering Koha. Changes are shown in Table 3.

Table 3 Change of ILMS/ILS (N=9)

Themes	Responses
Changed ILMS	**Librarian 1** - *We changed our ILMS from Millenium to Sierra* **Librarian 2** – *we changed from an in-house system to Destiny*
Changed ILMS to Koha	**Librarian 3** - *We have Librarysoft, it is extremely frustrating so we just implemented Koha about a month ago* **Librarian 4** - *Koha is used currently, formally Destiny* **Librarian 6** - *Owing to the challenges with library soft we have done consultations and have decided to use Koha. We have installed Koha already and have started doing manual entry of all our resources.* **Librarian 7** - *Before Koha we were using Librarysoft* **Librarian 8** – *We were never able to install Librarsoft so we moved to Koha* **Librarian 9** - *we are currently in the process of rolling over our newly adopted software; Koha*
In the processes of changing ILMS	**Librarian 2** - *I am considering moving to an open-source system. I am learning more on them and will present a proposal to management* **Librarian 5** - *The library is using Destiny software which is currently considering migrating to Koha.*

Reasons for Change of ILMS/ILL

Different reasons were provided for changing from one ILMS to another; technical challenges with a previous ILMS; six (66.7%) respondents), cost associated with ILMS three (33.3%) respondents, need to upgrade service provision; one (11.1%) respondent and the desire to use an ILMS that is used by other universities; one (11.1%) respondent as recorded in Table 4.

Table 4: Reasons for change of ILMS/ILL (N=9)

Themes	Responses
Need for upgrade Cost of old ILMS Technical challenges with old ILMS	**Librarian 1**- *We did not have any major challenges with millennium. It was just a need for change to enhance our services* **Librarian 2** - *I am considering moving to an open-source system. I am learning more on them and will present a proposal to management* **Librarian 4 -***Formerly Destiny was used but the cost associated with its use made us abandoned it.* **Librarian 7-** *We stopped using the old system because it is a paid service. We have chosen Koha because it is an open source and it is more user friendly compered to Librarysoft*
Used by other universities	**Librarian 3** -*It is extremely frustrating; we had issues with Librarysoft and we noticed there is an increased migration to Koha among academic libraries in Ghana* **Librarian 5** -*We had problems using Destiny, cataloguers were not able to log unto the system, it was a technical problem. We tried to solve the problem by liaising with developers and the IT unit.* **Librarian 6** - *Owing the technical challenges with library soft we have done consultations and have decided to use Koha* **Librarian 7-** *We stopped using the old system because it is a paid service. We have chosen Koha because it is an open source and it is more user friendly compered to Librarysoft* **Librarian 8 -** *We initially subscribed to Librarysoft. Even the initial installation was a problem, we were depending on the IT staff of another university who has Librarysoft installed to help install it for us. They had a problem with coding issues* **Librarian 9 -** *We are migrating to Koha because it comes with all the flexibilities you can think about.*
	Librarian 3 -*It is extremely frustrating; we had issues with Librarysoft and we noticed there is an increased migration to Koha among academic libraries in Ghana*

Reason for Choosing a Particular Brand of ILMS

The researchers tried to establish the reasons for adopting a specific brand of ILMS from those available on the market. Responses revealed that the majority; six (66.6%) of the libraries considered the cost of ILMSs as the most important factor before acquiring it. The next most important factor considered was the use of the ILMS by other libraries; five (55.5%), followed by whether the ILMS can perform the functions of the library; four (44.4%)

and lastly ease of use by two (22.2%) of the libraries.

Reasons for using Open-Source ILMS

Seven (77.8%) of the nine head librarians revealed making use of open-source software for core library functions and all seven are using Koha open source ILMS. Three (33.3%) head librarians each indicated that they changed to open-source software as it performs similar functions as the proprietary software, open-source software does not require purchasing cost and that open-source software are being used by other university libraries. Two (22.2%) head librarians changed in response to the open access drive. (Responses are indicated in Table 5).

Table 5: Reasons for open source ILMS (N=9)

Themes	Responses
No subscription cost	**Librarian 4** – *We are using Koha to avoid the challenge of paying subscription fee* **Librarian 8** – *Flexibility and cost are the main reasons for our adoption of open-source software*
Used by other universities	**Librarian 9** – *We adopted the open source because they are free and secure* **Librarian 5 –** *Koha, because a number of universities in Ghana are also using it* **Librarian 6** – *We took cognizance of the fact that most universities even including some big universities are using it*
Reputation/ functionality	**Librarian 3** – *We decided to go with Koha, it has good reputation* **Librarian 8** – *Flexibility and cost are the main reasons for our adoption of open-source software* **Librarian 9** –*We adopted the open source because they are free and secure*
Open-source drive	**Librarian 1** – *Response to the open access drive* **Librarian 9** –*The University, as a whole, supports open-source initiatives. It is part of the culture and explicitly stated in the university's IT policy that if there is an open-source option that should be highly considered.*

Functions ILMS Perform in the libraries

The librarians were asked to indicate the specific functions they used ILMS to perform, collation of responses revealed that all nine (100%) libraries used the cataloguing module, eight (88.9%) used the OPAC, seven (77.8%) used the circulation module,

seven (77.8%) used the query and reported generation module, two (22.2%) libraries used the acquisition module while only one (11.1%) library each used their ILMS to send automatic emails, use Myaccount and serial management modules. The interview also revealed that one (11.1%) library had its OPAC only on their Intranet.

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System Integration

The extent of integration between ILMS and the main university system was determined. This level of integration enhances the use of library systems and enables the flow of data between the university system and the library system for a seamless service to the university community. However, it was noted that only one (11.1%) of the nine libraries had some level of integration between the ILMS and the main university system to enable the same user account. Below is the statement from the respondent indicating the level of integration.

> Librarian 3 -*The ILS is integrated to the university's central authentication system and email system. Students and faculty accounts are same on all systems. The Learning management Moodle is being used and integrated with a reading list management system locally name Nyansapo which is modeled after Loughborough Online Reading List System (LORLS). We are now experimenting to see if we can link this to the Library Management System.*

Expectation and Benefits of ILMSs from the Perspective of Head Librarians

In determining whether their expectations of using ILMSs were being met, five (55.5%) head librarians indicated in the affirmative and the remaining four (44.4%) thought their expectations were not being met. All the nine (100%) librarians mentioned the benefit of time saving and easy work processes, eight (88.9%) mentioned speed of work, seven (77.8%) had experienced the benefit of digital storage of data, six (66.6%) indicated enhanced collaboration, and three (33.3%) acknowledged the visibility of library, collaboration and global access being enhanced. The findings revealed that all the libraries derived one benefit or the other from using ILMS which affirms Delone and McLean's (2003) Theory that information system use leads to benefit.

Maximum Utilisation of ILMSs

The researchers enquired from head librarians their opinion on the extent to which they thought their libraries were utilising the ILMS that they had acquired. Though the response on benefit shows that the libraries were benefiting from the use of ILMS, responses on extent of use revealed that only one librarian indicated the library was making maximum use of their acquired ILMS (11.1%). Two of the comments from the head librarians are as follows:

> Librarian 1 - *Frankly I don't think the library is making maximum use of the ILMSs that are available in the library; they are being underutilized...*

> Librarian 2 - *The library is not making maximum use of the systems. I think we are making only 50% use of the system. ...*

Reasons given by head librarians for not being able to make maximum use of the ILMSs included lack of initiative to explore all the functions of the ILMS (66.7%), lack of skills to use the systems fully (33.3%) and technical challenges (22.2%).

Staff Attitude Towards use of ILMS

Librarians were asked if staff were happy using ILMS, and if they were not happy and asking what reason(s) accounted for this. Responses listed in Table 6 reveal that it was only in three libraries (33.3%) where staff were happy using ILMS because it made their work easier and served them well. In the rest (66.7%) of the libraries, staff were not happy using the ILMS because of lack of skills (22.2%), technical challenges (44.4%) and being forced to use it (11.1%).

Table 6: Happy to use ILMS (N=9)

Themes	Responses
Easy work schedule	**Librarian 1 -** *I don't know but I am happy using the system because it makes my life and work easier. I think they should be happy. If you talk to people who used the old manual system, they really appreciate the system because it makes their work easier* **Librarian 4 -** *I can say that Koha has served us well, we are happy using it* **Librarian 7 -** *We have started the cataloguing on all campuses and everybody is participating.*
Lack of skills	**Librarian 2 -** *The staff are not happy using the system but use it because that is what is available the reason being that the staff do not have enough training and some staff think it is not user friendly enough* **Librarian 9 -** *I cannot objectively tell if staff are happy using the system or not but I know library staff easily throw in the towel in, and give up on even the minor task they need to perform using IT*
Technical challenges	**Librarian 3 -** *Using Librarysoft is extremely frustrating; we had issues with Librarysoft but once we get Koha running fully, we will be fine using the system* **Librarian 2 -** *The staff are not happy using the system but use it because that is what is available the reason being that the staff do not have enough training and some staff think it is not user friendly enough* **Librarian 5 -** *I don't think staff are happy using the system. Staff will usually complain 'the system is down'* **Librarian 6 -** *Sometimes you enter data and you will not find the data, during searches it does not retrieve all relevant documents; we are not happy with it.*
Use it because they have to	**Librarian 8 -** *The staff do not have a choice but to use them, I can use Koha to determine what staff have done in a particular time. This is a means of checking on the staff to use the system*

Challenge with System Change Over

As shown in Table 7, interviews with head librarians revealed that, five (55.5%) of the nine libraries studied had difficulties with system change over. Two (22.2%) libraries experienced data loss, three (33.3%) could not migrate data from one ILMS to a new ILMS and two (22.2%) libraries were challenged to use two ILMS concurrently. This clearly shows the challenges the library staff encountered in Ghana in an attempt to use ILMS, this also forfeits one of the purposes for using ILMS which is to be able to transfer data from one ILMS to another.

Table 7: System change over challenges

Theme	Responses
Loss of data	Librarian 1 - *We once migrated from a lower version to version 6.2. It looks as if the migration was not planned well, some the collection on the DSpace were no longer accessible on the system. We also have some files relocated from one collection to another; for instance, theses, files moving to article collection. We have to sit and manually move files from one collection to the other. About 500 files were affected* **Librarian 7 -** *We lost all our data from Librarysoft, so we are cataloguing every material again*
Inability to migrate data	**Librarian 4 -** *We were not able to migrate the library data from destiny to Koha because I did not have the expertise to do that. We tried looking for help from elsewhere, but it could not be done* **Librarian 6 -** *We have installed Koha already and have started doing manual entry of all our resources. We decided not to migrate because we have noticed a number of the entries in the Librarysoft are full of errors due to mistakes made by library staff during entries.* **Librarian 9 -***The only challenge we had migrating the data was that we could not migrate our circulation records. As a solution what we will do is we will recall our documents in possession of users during the long vacation in order to close the circulation records in Alexandria; this is already an annual process the library goes through, so we will just intensify it to help us do this exercise. We will possibly be running the two ILMS concurrently for the next one year till we fully train our users*
Using two ILMS concurrently	**Librarian 6** *We are using the two systems concurrently, but Koha is just for data entry and using Librarysoft for all library functions including entry of new books. So, for newly acquired materials we are doing double entries into Koha and Librarysoft for us to still be able to serve our patrons* **Librarian 9 -***The only challenge we had migrating the data was that we could not migrate our circulation records. As a solution what we will do is we will recall our documents in possession of users during the long vacation in order to close the circulation records in Alexandria; this is already an annual process the library goes through, so we will just intensify it to help us do this exercise. We will possibly be running the two ILMS concurrently for the next one year till we have fully trained our users*

Post Implementation System Evaluation and Maintenance

In order to ascertain whether an ILMS was performing as expected, it needed to be evaluated. The results of the interviews show that only two (22.2%) libraries ever evaluated their ILMS. One library used a survey of students while the other used system generated data to determine the usefulness of the ILMS. This situation is not the best, the quality of ILMSs must be ensured and the only way to determine the quality of an information system is through its performance. Once performance evaluation is lacking, it is difficult to determine if the system is meeting the needs of its users. Below are some comments from Head librarians:

Librarian 8 – *We have never evaluated the system but I expect Koha to perform certain functions for us so if I log on to the system and it is not functioning well it means the system is not meeting my needs*

Librarian 5 – *The performance of destiny was never evaluated*

Librarian 4 – *I have not done any formal evaluation. But I can say that Koha has served as well. Destiny was a bit complex to use though destiny could do more than Koha*

Discussion

Use of LMS/ILMS

This study revealed the use of different brands of ILMS in the libraries studied. It was also noted that although all the libraries studied belonged to the same consortium, the ILMS installed was individual project in the various libraries. This finding is similar to the practice of libraries acquiring ILMS individually, rather than as a consortium as revealed by Siddique and Mahmood (2016). This is contrary to the Western trend where a major role of a library consortium is to help acquire ILMS for all member libraries (Machovec, 2014 and Cannell and Guy, 2001). The current practice in Ghana comes with a lot of risk as each library needs to raise a lot of funds to acquire ILMS and needs technical expertise to run the project successfully.

The findings also show that all the libraries were using well-known brands of ILMS with Koha as the most used ILMS. This is an indication that all the libraries studied in Ghana are using standard ILMS as is done in developed countries like the USA and South Africa to enhance standardisation (Breeding 2016; and Stilwell and Hoskins 2012) and not in-house ones that do not enhance standardisation like some libraries in Pakistan (Siddique and Mahmood, 2016). It also affirms the adopted theory that people use information system because of its quality (Delone and McLean, 2003).

Purposes for Adopting ILMS and Function it is used for

Responses from head librarians as shown in the data specified three main purposes for adopting ILMS: to enhance service delivery, for fast and easy work procedure and to automate work processes. These reasons reflect the general consensus in the literature, Iwhiwhu and Eyekpegha (2009) regarding the aim of adopting ILMS in service delivery. This shows that the library fraternity in Ghana is thinking alike with its counterparts in the developed world to provide enhanced service. It also reveals that the libraries have objectives which they expect to achieve from the use of ILMS.

Despite all the great purposes outlined for adopting an ILMS, the data indicates that only the cataloguing module of ILMS was used by all the nine libraries, while the other modules including OPAC, circulation, report and acquisition were not used by all. It was also noted that none of the libraries was using the Electronic Resource Management (ERM) module of the ILMS though their ILMS could perform such a function. This situation is common in Africa and supports the claims of Bassey (2016) and Omeluzor and Oyovwe-tinuoye (2016) that in some libraries in Nigeria, not all library functions were automated and that of Boateng *et al.* (2014) that not all modules of the ILMS were used at the KNUST library in Ghana. Similar situations were recorded in parts of India and Pakistan by Husain and Nazim (2015), Kumar and Biradar (2010) and Ramzan and Singh (2009). This situation is contrary to libraries in developed countries where application of ILMS has advanced to enable self-service Morris et al. (2001) and Tedd (2006) and even in parts of Asia (Tyagi and Senthil, 2015).

There is also lack of integration between ILMS and university systems in Ghana which is contrary to existing literature from developed countries where a number of researchers have shown how academic libraries have been able to integrate their services into existing e-learning management systems of institutions to increase patronage of library services and resources for learning and being able to generate analytical data from ILMSs (Bell, 2016; Cross, 2015; Detterbeck and Sciangula, 2017;Black and Blankenship, 2010).

Findings also indicate that only one librarian felt they were making maximum use of the ILMS deployed. Among the reasons given, it is interesting to note that technical challenges which will affect system quality as indicated in the model adopted was the least mentioned reason for not fully utilising the available ILMS. The findings on the reason why staff

were not happy using ILMS somehow contradicts the findings on the reason why the libraries were not fully utilising the ILMSs. This is because technical challenge was the least of the reasons provided for not fully utilising ILMS but technical challenge was the most cited reason for staff not being happy to use the system. The latter result validates Delone and McLean (2003) theory that the quality of an information system affects its use. It has therefore been revealed by this study that, the use of ILMS in academic libraries in Ghana is not fulfilling its full purpose. The library fraternity in other parts of the world have developed union catalogues to help users request library items from within a consortium or from national or international locations (Evans and Thomas, 2007 and Froud, 2006, Tyagi and Senthil 2015). It was noted in this study that libraries in Ghana did not have a union catalogue. This situation does not market the library facilities within the Ghanaian academic community well enough and also means that the libraries are not taking full advantage of their ILMS.

Libraries not using all the modules of the ILMS to perform library functions means that libraries are not making maximum use of the ILMS, are therefore not getting value for money and affect the quality-of-service delivery as some are still using manual circulation records.

Change of ILMS/ILS

This finding reveals that there is a high ILMS turnover rate among academic libraries in Ghana and is similar to the very high turnover rate of ILMS in Nigerian libraries as indicated by Kari and Baro (2014). It is interesting to note that of the eight libraries which changed their ILMS, six (75%) of them changed from proprietary software to Koha, an open-source software. It is noteworthy that, at the time of the study, two more libraries were at the consideration stage of changing their ILMS. This finding supports evidence in the literature that, Koha was the most preferred open source ILMS, as has been noted by Giri (2012) and Balnaves (2008). It can be deduced that most libraries especially in Africa are opting for open source ILMS and their most preferred brand is Koha as has been revealed by this study.

The chief reason for changing ILMS was indicated as technical challenges with a previous ILMS leading to non-use of ILMS or non-use of some modules. This is referred to as information system failure and has occurred in other organisations as well (Marnewick, 2017). Technical challenge as the most cited reason for changing ILMS in Ghana sits within the premise of quality as the main determinant for use and user satisfaction of information systems (Delone and McLean, 2003). This means that when the libraries experience challenges due to poor quality of the system, they ceased to use the system.

Cost associated with ILMS was the second most cited reason for change followed by need to upgrade service provision and the desire to use an ILMS that is used by other universities. Upasani (2016) recorded the same reasons for libraries relinquishing proprietary ILMS for open-source ones. This also confirms the assertion of both Balnaves (2008) and Pruett and Choi (2013) that Open source software (OSS) are cost saving options for library automation resulting in many libraries now opting for OSS.

Reason for Choosing a Particular Brand of ILMS

Though the reasons given correspond with those given by South African libraries as noted by Stilwell and Hoskins (2012), cost and use by other libraries overshadowed the other critical factors of feasibility studies, ability to meet the library's requirement and ease of use before ILMS installation. The opinion of the researchers is that, though sustainability determined by cost is very important, acquiring an affordable ILMS that will not meet the needs of the library is useless. Likewise, as much as it is important to use ILMS that is being used by others in order to share expertise and information, this factor should not take prominence over ease of use (a major factor of system quality as identified by Delone and McLean (2003) since there will be no value derived from an ILMS not easily used to perform basic functions.

The choice of open source is based on reasons such as minimal cost, performs equivalently to proprietary systems and as a response to the open access drive. This affirms existing literature (Makori and Mauti, 2016; Mutula, 2012; Otunla and Akanmu-Adeyemo, 2010 as well as Siddique and Mahmood, 2015) that OSS is widely adopted in developing

countries as a cost saving means of automation (Upasani, 2016).

From some of the comments presented, some of the librarians thought ILMS performance was based on trusting others' opinions and usage. An ILMS should be tailored to meet the unique needs of each institution.

Conclusion

The study revealed the extent of implementation of ILMS in academic libraries in Ghana. All the libraries studied have implemented an ILMS and have attested to gaining benefits such time saving, easy work processes, speed of work, digital storage of data, collaboration, visibility of library and global access. It was noted that Ghanaian libraries are joining the trend noted in other parts of the world where most libraries are now moving from proprietary ILMS to open- source. The majority of the libraries are using open-source software with most of them having changed from proprietary to open source ILMS. The study revealed that the most used function of ILMS is cataloguing followed by OPAC and circulation, while acquisition recorded very low usage rates. And not all the modules in the ILMS are implemented in all the libraries studied. Also, only one library has integrated its ILMS in to the University wide system.

Although Alexandrai, Koha and Sierra have the capability to support e-resource management, none of the libraries used the ILMS to manage electronic collections. Sierra could also be used for creating the digital repository of the library, but it was not used for that function. This does not support the major purpose of the development of the next generation ILMS which is the provision of unified workflows.

Recommendations

One of the benefits of ILMS use is the ability to establish a union catalogue that will serve as a visibility point for the collection of all academic libraries' resources which can be accessed by anybody from any part of the world. Academic libraries have been using ILMS in Ghana for over ten years now. They should therefore establish a union catalogue.

Member libraries of CARLIGH should consider acquiring a common ILMS and put a team of experts together to help roll over the system to all member libraries. This will help in the easy implementation of the system at a reduced cost for members and the assurance of availability of experts to help install the ILMS.

Libraries should also ensure they have tested the ILMS they want to purchase to guarantee that it will perform to their satisfaction before it is acquired. This will avoid the current situation of acquiring an ILMS and abandoning it later due to technical challenges. Training and sensitising of library staff on the use of ILMS for specific library functions should be made a priority in libraries as the ability and willingness to use the ILMS is a pre-requisite to the effectiveness of the system.

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Legislation Used to Apply Artificial Intelligence for the Management of Records at the Council for Scientific and Industrial Research in South Africa

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Abstract

This study sought to investigate how legislation can be applied in the use of artificial intelligence (AI) for records management at the Council for Scientific and Industrial Research (CSIR), South Africa. The legislative framework does not only include the major element of legislation, but also the administrative, political, organisational, social and economic circumstances or arrangement, which make the legislation available, accessible, enforceable and effective. The legislative framework is the heart of attainment of commercial goals in all corporate industries, including archives and records management particularly using AI and robotic machines. AI refers to a robotic machine that has the capability for automated digitisation, automated classification, and records storage and retrieval. A convergent mixed-methods research was conducted, and data were collected, using interviews and questionnaires data collection techniques. Data was collected from sampled population of one portfolio manager, one records manager, three professional repositories and indexers, two archives technicians and one data librarian. Questionnaire was administered to three professional repositories and indexers, two archives technicians and one data librarian. Interviews was conducted to one portfolio manager and one records manager. Data were analysed thematically and statistically and presented in tables and figures. The study revealed that the CSIR utilised the South Africa legislative framework to manage their records. The study concluded that the CSIR should ensure that their legislative framework is reviewed to allow them to effectively apply AI for records management. The study proposed a framework to guide the application of the legislations when using AI for records management at the CSIR. It is trusted that the proposed framework will serve as a guideline for the implementation of legislation when utilising AI in the archives and records management industry.

Keywords: Artificial Intelligence, Legislative Framework, Records Management, Council for Scientific and Industrial Research

Introduction and Background of the Study

The legislative framework does not only include the major element of the legislation, but also the administrative, political, organisational, social and economic circumstances or arrangements, which make the legislation available, accessible, enforceable and effective (Rundle, 2009). The legislative framework is the heart of attainment of commercial goals in all corporate industries, including archives and records management (Marutha, 2019; National Policy Institute, 2019). Any development in records management must be attained in overall realisation that records are created in an institutional setting and based on a national legislative and regulatory framework (Katuu and Van der Walt, 2016; Marutha, 2019). The legislative framework has a credible

influence on how records are managed in any country, with those that are generated and saved in networked environments (Ngoepe and Saurombe, 2016). Netshakhuma (2019) states that effective archives and records management is directed by a comprehensive legislative framework which explain records to prevent uncertainty about the scope of the accountability at the National Archives. Each records management division, whether it be at a private or public institution, needs a proper legislative framework to manage its records effectively and efficiently through the adoption and application of artificial intelligence (AI). Weckerk and McDonald (2007); West (2015); Kalaiselvan et al. (2021); Marcu and Marcu (2021) define AI as a margin of computer science that focuses on the construction of intelligent machineries that function like human intelligence (HI). Iron Mountain (2019b) refers to AI as the process of working with robotic machines to do the jobs better, produce greater competencies and drive economic evolution. In this study, AI refers to a programmed robotic machine and AI-powered computer programs that are capable of automatically carrying out a difficult sequence of activities in the area of archives and records management (Iron Mountain, 2019a). In the context of this study, the term AI refers to a robotic machine that has the capability for automated digitisation, automated classification, and records storage and retrieval (Ripcord Company, 2019). However, effective legislation is needed for the better usage of AI for the management of records at CSIR in South Africa.

The statutory and regulation framework also comprises the Promotion of Access to Information Act 2 of 2000 (PAIA); Protection of Personal Information Act 4 of 2013; and Electronic Communication and Transaction Act 25 of 2000 (ECTA). This study further acknowledges the role that is played by the Constitution of the Republic of South Africa in archives and records management in South Africa. It is a constitutional right for records to be managed and retrieved by the South African public. All institutions, including the CSIR, manage and regulate their archives and records management services through National Achieves and Records Service of South Africa (NARSSA) policy guidelines and directives (section 13 of NARSSA Act 43 of 1996). NARSSA is an institution that gives guidelines and legislative frameworks to records management practitioners across all public and provide institutions in South Africa to manage their records. The Constitution of the Republic of South Africa gives birth to all the legislative frameworks in the country; and all the legislative frameworks are developed by the Constitution of the Republic of South Africa (NARSSA 43 of 1996). Hence this study intends to investigate the legislation that can be used to apply AI for the management of records at CSIR in South Africa. A framework is also proposed to provide guidance on how the legislation can be used to apply AI for the management of records at CSIR in South Africa. CSIR is a research institute responsible for research production and innovation in South Africa. Its headquarters is based in Pretoria, South Africa.

Contextual Setting

CSIR is a superlative African research and innovation organisation started through the Scientific and Industrial Council Act, No. 33 of 1945, of South Africa. Section 4(d) of the Act, states that the function of the CSIR will be to publish information regarding its operations and create facilities for the storage, collection and distribution of information regarding the research. The CSIR undertakes directed, multidisciplinary research and high-tech invention that subsidises the development of the quality of life for South Africans (CSIR, 2018). The organisation makes a positive contribution to sustaining the government's initiatives via absorbed research relating to the country's developmental priorities, the institution's directives and its science, engineering and technological capabilities (CSIR, 2018). The key subjects that the CSIR pursues to engage via numerous interferences comprise: generating a vivacious economy and employment prospects; structure an accomplished state that is willing to steadily convey first-class services for all South Africans; and subsidise the improvement of socio-economic infrastructure like energy, transport, water resources and information communication technology (ICT) networks (CSIR, 2018).

The CSIR houses a huge number of records due to the rising number of research projects that are driven by economic development and the social infrastructure developments that are taking place in South Africa (Matroko, Mniki and Van Deventer, 2007). Besides, many records are usually transferred

from different organisations such as the Department of Science and Technology and Armscor in South Africa to the CSIR just because of the strategic position of the Council in the country. Currently, there are many records deposited at CSIR to support the researchers in South Africa (Matroko et al. 2007). For reliable access and permanent storage of records, the CSIR manages its records both manually and electronically to ensure that researchers always have access to records (Van Deventer, 2011). Numerous efforts have been made to ensure that records are managed by various devices for their permanency and for the advantage of researchers who need effective and efficient access to scientifically managed records.

Purpose and Objectives of the Study

The purpose of this study was to investigate how legislations can be applied when using AI for records management at the CSIR in South Africa. The following were the objectives; to:

- assess legislations that can be applied to use AI for the management of records at the CSIR.
- propose a framework for the application of legislations to use AI for records management at the CSIR

Literature Review

Legal framework does not include only the major element of the legislation itself, but also the administrative, political, organisational, social and economic circumstances or arrangement, which make the legislation available, accessible, enforceable and effective (Rundle, 2009; National Policy Institute, 2019). Legislative framework is the heart of the attainment of commercial goals in all corporate industries, including archives and records management (Marutha, 2019). Any development in the management of records must be attained in overall cognisance that records are created in an institutional setting and based on a national legislative and regulatory framework (Katuu and Van der Walt 2016; Marutha 2019). Legislative framework has an incredible influence on how records, together with those that are generated and saved in networked environments, are managed in any country (Ngoepe

and Saurombe, 2016). Netshakhuma (2019) states that effective archives and records management is directed by a comprehensive legislative framework that explains records to evade uncertainty about the scope of the accountability at the national archives. Every records management division, whether in a private or a public institution, needs proper policy and legal framework to manage its records effectively and efficiently. Hence this study takes into cognisance the legislation to ensure there is effective management of records in both the public and private institutions; this also include the CSIR. Legislation plays a crucial role in using AI for the management of records at CSIR. However, the current legislative framework in South Africa has to be reviewed so that they can infuse the application of AI in manging records in CSIR (Modiba, 2021).

Constitution of the Republic of South Africa

Chapter 2, section 32, sub-section 1 of the Constitution states that everybody has the right to retrieve information under the custody of the state and any information held by another individual and that is obligatory for the exercise or protection of any rights (Constitution of the Republic of South Africa, 1996). The utilisation of AI would ensure that individuals requesting information are provided with this information quicker and easier by using robotics to access it because AI ensures that access to information occurs at a high speed. Requestors of information would also be able to perform their respective functions on time because of this speed of access (Tom, Keane, Blaze, Pasquale, Chiang, Lee and Lee, 2020).

Section 5 of the Constitution deals with the operational parts of private regional legislative capabilities regarding the archives and records management. Part A of Schedule Five of the Constitution gives both the provincial and national archives the mandate and responsibility to manage and preserve records. The Constitution mandates public archives repositories in South Africa to regulate records management in governmental bodies (national departments, provincial departments, municipalities and statutory bodies). This mandate emanates from Jenkinson's assertion that the primary role of the archivist or records manager is to manage the records, while the secondary role is to make

records accessible to the users. This mandate charges public archives repositories with a statutory regulatory role concerning the management of records in governmental bodies, as well as preservation of records of enduring value to be used or retrieved by the public as a whole (Modiba et al. 2019). The constitution then gave birth to several pieces of legislation in South Africa that are authorised and accountable for the management and preservation of records in South Africa (Constitution of the Republic of South Africa, 1996).

The National Archives and Records Services of South Africa Act

In terms of section 13(iii), it is the responsibility of the National Archivist to assess the conditions subject to which electronic records are managed (NARSSA 1996). Therefore, in the application of AI for records management, the National Archivist would advise which records management activities would be managed through AI. According to this Act, an electronic records system refers to any records system in which information is created electronically and stored via computer technology (NARSSA, 1996).

Section 13 also addresses the administration and management of public records. It specifies that subject to the requirements of this NARSSA Act and charges the National Archivist with the appropriate management and maintenance of public records under the care of governmental bodies (NARSSA, 1996). For the application of AI to be effectively adopted and applied to manage records, organisations must comply with the NARSSA Act to make sure that the management of records is suitable and effective. The application of AI should be linked to and should not contravene the NARSSA Act to ensure that records are managed properly and effectively, hence this act has been reviewed in this study. The application of AI could ensure that the CSIR complies with the act by making records accessible as quickly as possible, managing records effectively, preserving records in the cloud storage and keeping records safe by ensuring that they are not destroyed, misplaced or lost. Accordingly, Ripcord Company (2019) alluded that AI and robotic machines are used to manage records.

Promotion of Access to Information Act

Section 29 of this Act addresses issues related to access to and methods of access to electronic documents. If a requestor is given a notice of access, it becomes the responsibility of the information officer to locate the record and give it to the requestor (PAIA, 2000). The information officer would use AI such as robotics and connected software to locate and retrieve the requested information for the requestor. The requestor might also search for the information by himself in the records on the database that is linked to a robot and, when retrieved, the record would appear on the screen of the computer (Kruhse-Lehtonen and Hofmann, 2020).

However, section 43 of this Act deals with the obligatory protection of research information of the third party and the protection of research information of public institutions (PAIA, 2000). The cloud storage in the organisation would be protected in such a way that no one without proper access to the records would be able to access them. Only the information officer would be able to grant access to records in their cloud storage. The records would be protected by encrypted security codes and passwords to ensure that the records are not accessed by anyone. AI security systems would ensure that records are protected against illegal and unauthorised access (Tom et al. 2020).

Protection of Personal Information Act

Chapter 2, section 4, of this Act is based on the lawful dispensation of personal information. The section indicates that when capturing personal information, the information officer should be responsible and accountable, and capture quality and reliable information, and safeguard the information processed (POPIA, 2013). Robotic machines would be able to digitise as many records as possible. The robot would only digitise the information that is provided by the information officer. Therefore, it is the responsibility of the information officer to digitise the required information and take full responsibility for the information they digitise through AI because they are the ones feeding the robot with what it needs to be digitised (Demaitre, 2020).

Section 5 of chapter 2 of the Act also plays a crucial role and should be considered when adopting AI for the management of records at the CSIR. This

section describes that data subjects, meaning the person whose data is captured, has the right to have his or her personal information captured in accordance with the circumstances of the lawful capturing of personal information. His or her personal information should be lawfully gathered and processed. A data subject would not have his or her personal information captured for the sake of straightforward marketing by means of an unsought automated communications act (POPIA, 2013). The information officer digitising the records should ensure that he or she captures the correct information about other persons.

Section 24 of the Act is about the correction of personal information and should also be considered during the implementation and utilisation of AI for the management of records. A data subject may, in the arranged way, ask an accountable party to fix or remove personal data about a data subject in its custody or under a regulation that is imprecise, inappropriate, unnecessary, out of date, inadequate, deceptive or has been obtained illegally. This also includes abolishing or removing a record of personal information about the data subject that the accountable party is no longer permitted to withhold in terms of section 14 of POPIA (2013). The robotic machines to be adopted and utilised for the management of records should be able to correct information that was incorrect when it was automated. The AI should be able to edit information captured so that it can autocorrect the information when requested (Davenport, 2019).

Electronic Communication and Transaction Act

Chapter IV, section 27 addresses the acceptance of electronic filing and issuing of a document. The Act states that any communal body that, pursuant to any law, accepts the filing of documents or has a need for records to be created and retained (ECTA, 2002), could adopt the utilisation of AI such as robotics, software and databases to ensure that records are filed electronically. Organisations would also use AI to issue documents to the users as they request them.

Part 2, section 10 deals with the responsibility of the Minister to establish the electronic transactions policy (ECTA, 2002). Public organisations should ensure that they establish and develop policies that would assist in the utilisation of the 4IR technologies such as AI, robotics, big data, blockchain, internet of things and web of things in the public sector (Manda and Dhaou, 2019). Such policies on electronic transactions assist institutions such as the CSIR to swiftly manage their records through AI.

Problem Statement

The problem that led to this study is that, without reviewed records management, legislation, including the adoption and application of AI, records will not be managed effectively (Modiba, et al. 2019; Modiba, 2021). CSIR is not yet using AI for the management of records. Therefore, there are legislation in place to guide on the utilisation of AI for the management of records. Hence, there is a need for CSIR to conceptualise the legislative framework that can be suitable to incorporate the application of AI for the effective management of records. Without proper legislation CSIR might not be able to apply AI to manage its records effectively and efficiently.

Legislative framework will guide CSIR on how to use AI for the management of records. With legislation in place CSIR will be able to adopt the use of AI and robotic machine to manage records effectively and efficiently. The legislative framework will guide the records management practitioners to create, maintain, retrieve, store and dispose of records, using AI and robotics. Therefore, this study sought to investigate the legislations that can be used to apply AI for the management of records at CSIR in South Africa. This study further recommends a framework to guide the records management practitioners at CSIR on how to use the legislative framework to utilise AI for the management of records at CSIR in South Africa.

Research Methodology

A convergent mixed-methods research was conducted, and data were collected, using interviews and questionnaires. The study was conducted from the perspectives of ontological pluralism and epistemic pragmatism. A convergent design was selected to allow researchers to collect qualitative and quantitative data from participants, analyse the data independently and combine the responses during data interpretation. The study further used parallel sampling as a technique to collect qualitative and

quantitative data from the same population, using different samples (Creswell and Creswell, 2018; Creswell and Plano-Clark, 2018).

This study was conducted among records managers and records management practitioners. They provided information about their knowledge, expertise and expectations of using AI for records management. This study focused on this staff because they are more knowledgeable about legislation applicable for the AI and records management. The population of the study consisted of a sample size of eight respondents currently employed by CSIR. The respondents were one portfolio manager, one records manager, three indexers, two archives technicians and one data librarian. The portfolio manager and records manager contributed qualitative data to the study through interviews. The interview questions were structured, and the interview was conducted through Microsoft Teams since data was collected during Covid 19 pandemic. During the interview the participants were asked about their views on the usability of AI for the management of records at CSIR.

Three professional repositories and indexers, two archives technicians and one data librarian contributed quantitative data to the study through questionnaires. The researcher used both open and close ended questions to answer questions on the usability of AI for the management of records at the CSIR. Open ended questions allowed the respondents to express themselves on the usability of AI for the management of records at CSIR.

Findings of the Study

Electronic Records Management Activities Dealt with by Legislative Framework

The legislative framework deals with electronic records management activities in various ways. Based on this statement, the respondents were asked in a questionnaire about electronic records management activities attended to by the legislative framework. The legislative framework at the CSIR was applied to discharge electronic records management activities, as indicated in figure 1. 5 (83%) respondents indicated that the legislative framework was used for the creation of records; 6 (100%) indicated it was used for the retrieval of records; 5 (83%) indicated it was used for the storage of records; 5 (83%) indicated it was used for records maintenance and 6 (100%) indicated it was used for the safety and security of records.
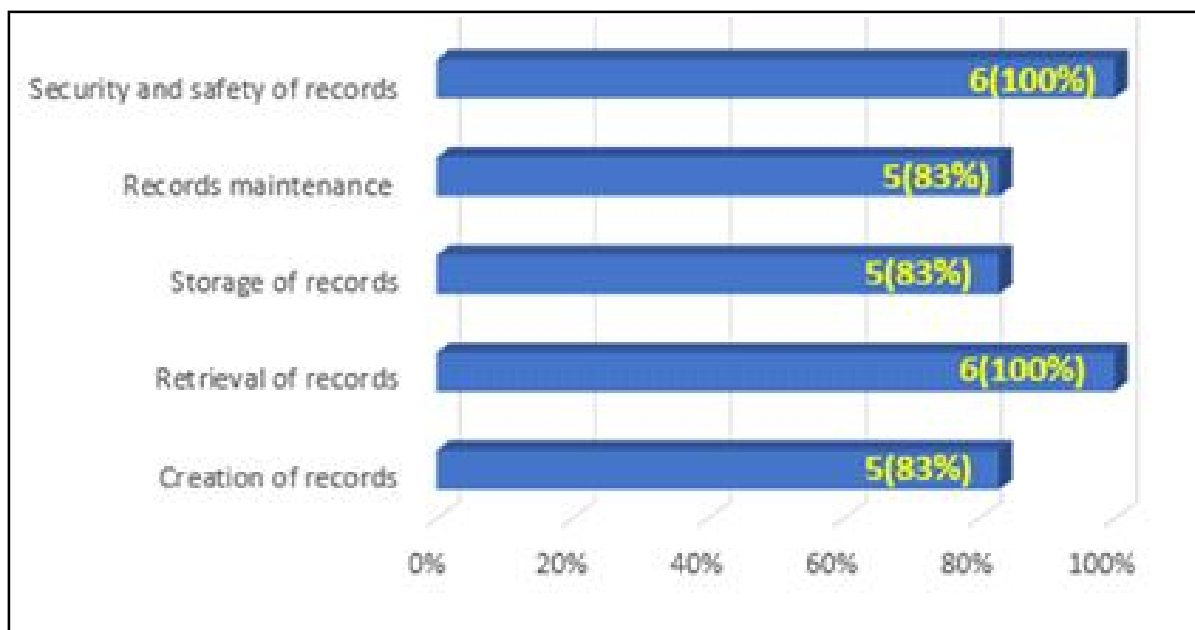

Figure 1: Electronic records activities addressed by legislative framework (N=6)

The participants interviewed were also asked about the application of a legislative framework to manage electronic records at the CSIR. They identified the legislative framework used at the CSIR for records management. They also explained how the legislative framework was used to manage records effectively and efficiently. They responded as follows:

Participant 1 stated that, "CSIR is a governmental body so it has to comply with the National Achieves and Records Service of South Africa Act to ensure that CSIR achieve the principle of good management of records, for CSIR to perform its duties as specified in the Scientific Research Council Amendment Act and also ensure accountability, integrity and principles that comes with good records management".

Participant 2 stated: "Legislative framework used to guide the CSIR to comply with all the requirements to ensure there is good records management practice".

South Africa Legislative Framework Used to Manage Records at the CSIR

Organisations in South Africa make use of legislative frameworks to manage their records effectively. Such legislative frameworks are used to provide guidance on how records should be managed. Hence, the respondents were requested in the questionnaire to identify the South African legislative framework that was used to manage records at the CSIR. Figure 2 indicates that 1 (17%) respondent said that the CSIR used the Constitution; 4 (67%) indicated that they used Promotion of Access to Information Act (PAIA); 1 (17%) confirmed that they used the Promotion of Administrative Justice Act, 3 of 2000 (PAJA); 5(83%) said that they used the NARSSA Act; 4 (67%) indicated that they used the Protection of Information Act, 84 of 1982 and 5 (83%) indicated that they used Act   Protection of Personal
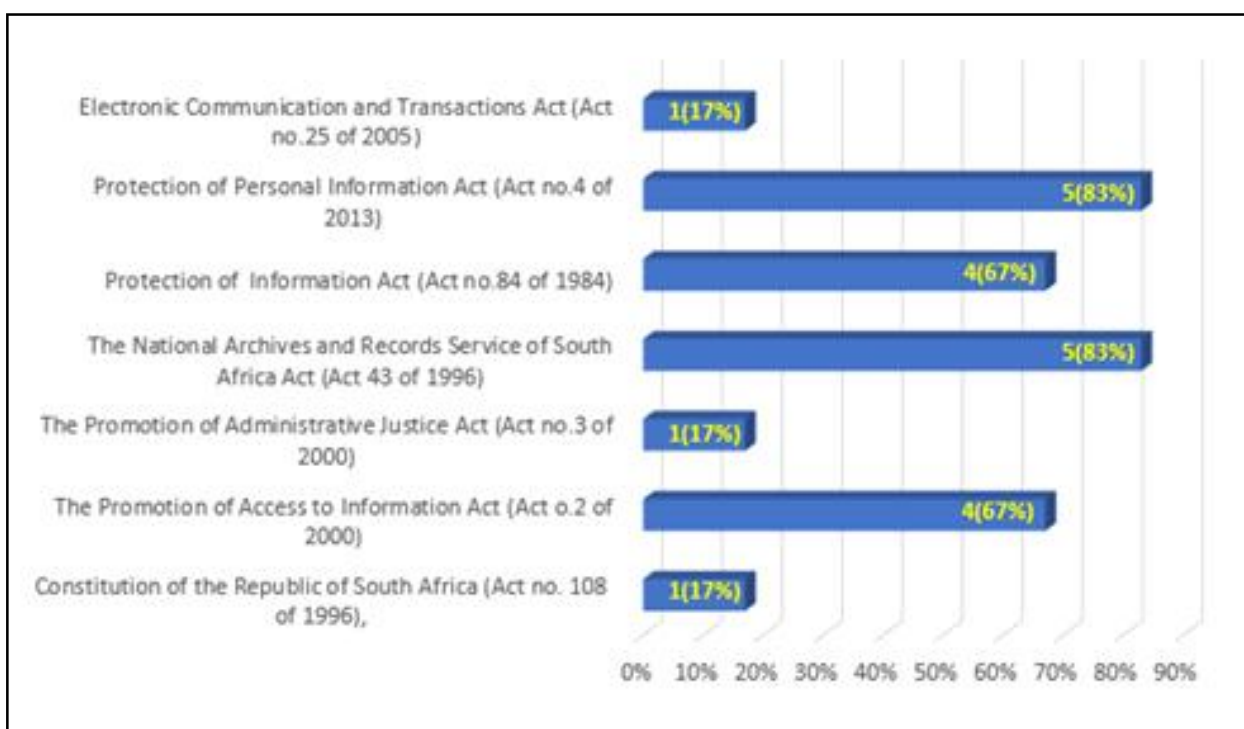

Figure 2: South African legislative framework used to manage records at CSIR (N=6)

Information (POPIA) and 1 (17%) said they used the ECTA.

The participants interviewed were asked about the South African legislative frameworks used for records management at the CSIR. They identified that the CSIR used the South African legislative framework for records management. The responses were as follows:

Participant 1 stated that the CSIR used the following as legislative framework to manage their records: The National Archives and Records Service of South Africa Act, 43 of 1996; the Promotion of Access to Information Act, 2 of 2000; the Protection of Information Act, 84 of 1984; the Protection of Personal Information Act, 4 of 2013; the Electronic Communication and Transactions Act, 25 of 2005; the Scientific Research Council Amendment Act, 71 of 1990 and the Copyrights Act, 98 of 1978.

Participant 2 stated that the CSIR used the following legislative framework: The National Archives and Records Service of South Africa Act, 43 of 1996; the Promotion of Access to Information Act, 2 of 2000; the Protection of Information Act, 84 of 1984; the Protection of Personal Information Act, 4 of 2013; the Electronic Communication and Transactions Act, 25 of 2005; the Scientific Research Council Amendment Act, 71 of 1990; the Copyrights Acts, 98 of 1987; the King IV report on corporative governance and the Spatial Data Infrastructure Act, 54 of 2003, as legislative framework to manage records.

Utilisation of a Legislative Framework to Manage Records at the CSIR

A legislative framework can be used to ensure that records are properly managed. Hence, the respondents were asked in the questionnaire to indicate how the CISR apply the legislative framework for records management. Figure 3 shows that 4 (67%) respondents said that the CSIR used the legislative framework for policy development; 3 (50%) indicated decision-making; 2 (33%) highlighted problem-solving; 4 (67%) said it was used for developing a records management framework; 4(67%) indicated that it was used for developing electronic systems; and 3(50%) indicated that the legislative framework was used to implement training
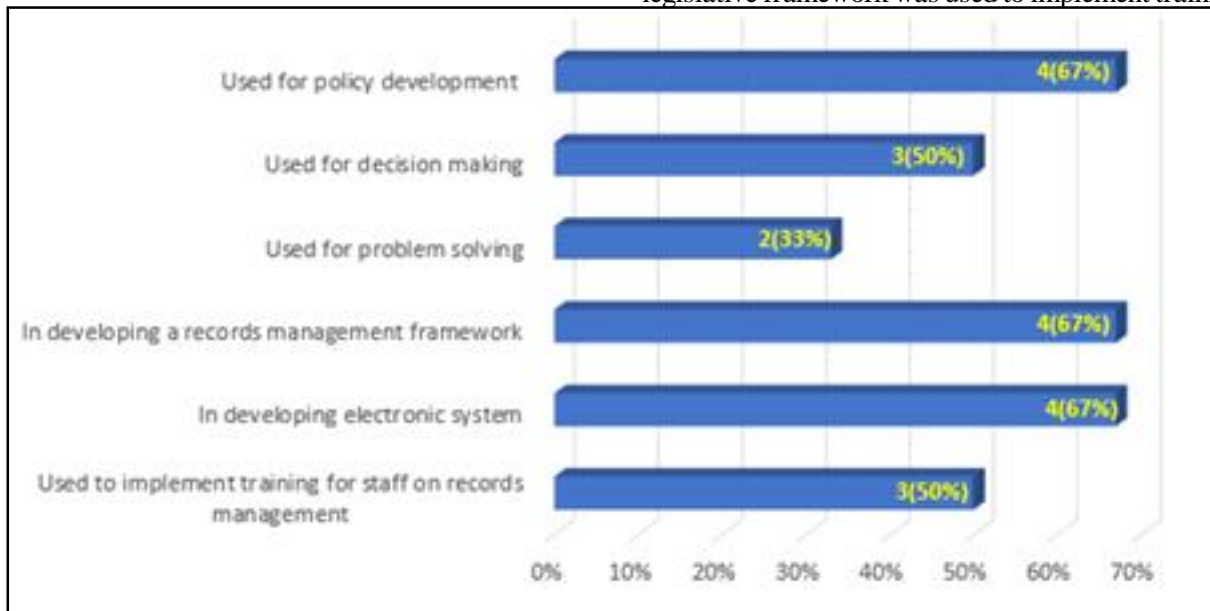

Figure 3: Utilisation of legislative framework for management of records at CSIR (N=6)

for staff in records management.

Gaps Identified in the Legislative Framework for Records Management

There are gaps in the legislative framework that will obstruct organisations in giving guidance on how records should be managed at organisations. Based on this statement, the respondents were asked to describe the gaps in the legislative framework used at the CSIR by means of open-ended questions in a questionnaire. Some respondents identified the gaps in the legislative framework used to manage records, while others did not identify any gaps in the legislative framework. The responses were as follows:

> Respondent 1 stated that "Policies are not compatible with electronic records management system".

> Respondents 2 stated that "There is no enforceable and governance of legislations at CSIR".

> Respondent 3 stated that "There is not compliance of legislations at CSIR".

> Respondent 4 stated that "Policies do not cover effectively the electronic records".

> Respondent 5 stated that "There is no gap in the legislation".

> Respondent 6 stated that 'I am not certain about what can be added in the legislation".

> The participants were also asked about the gaps in the legislative framework. They stated that no gaps were identified in the legislative framework used to manage records. The responses were as follows:

> Participant 1 stated that "There is no gaps on the legislative framework"

> Participant 2 stated that "The legislative framework has no gaps".

Improvements to the Legislative Framework used for Records Management

The legislative framework should be improved regularly so that it could provide effective guidance on records management to organisations. Hence, the respondents were asked about required improvements to the legislative framework for records management by means of open-ended questions in a questionnaire. The respondents mentioned that the legislative framework should be improved to infuse the adoption of new ICT in records management. The responses were as follows:

> Respondent 1 stated that: "Legislative framework should include the investigation and adoption of a suitable electronic records management system".

> Respondent 2 stated that: "CSIR should conduct workshops about the legislative framework".

> Respondent 3 stated that: "CSIR should enforce compliance of legislative framework within the employees".

> Respondent 4 stated that: "I am not sure about the improvements that can be added on the legislative framework at CSIR".

> Respondent 5 stated that: "There is no improvement needed on the legislative framework".

> Respondent 6 did not answer the question.

The interviewed participants were also asked about improvements that could be made to the legislative framework. They indicated that no improvements have to be made to the current legislative framework, since it covers all the critical components of records management in the country. The responses were as follows:

> Participants 1 stated: "No improvement is needed on the legislative framework".

> Participant 2 stated that: "The legislative framework needs no improvement".

Document analysis indicated that the NARSSA Act does not deal with the adoption, implementation and utilisation of information technology in records management.

Discussion of the Results

Application of Records Management Legislative Framework

The legislative framework plays a crucial role in any institutional activity, especially in the records management industry by ensuring that records are effectively managed. The literature review shows that legislation provides guidance and direction as to how records should be created, kept and maintained for future institutional and individual employee accountability (Marutha, 2019). The literature further indicates that the legislative framework provides guidance as to how records are captured, transmitted, used, stored, indexed, retrieved, controlled, retained; and employees of any institution must comply with the relevant legislations to ensure that services are provided adequately (Katuu and Van der Walt, 2016). South Africa also has its own legislative frameworks in the field of records management; and the CSIR utilises them to ensure that their records are managed effectively and efficiently.

The records management industry establishes and develops policies through the legislative framework that best manages the records in South Africa (Netshakhuma, 2019). Therefore, the CSIR used the national policy framework developed by the industry to establish and develop its own records management policy. The six respondents and participants indicated that they are aware of the legislative framework that is used to manage records at the CSIR. They articulated that such legislative frameworks apply to records management practice at the CSIR. The CSIR uses the legislative framework because it is the heart of achievement of business goals in all business sectors, including the archives and records management industry (Marutha, 2019).

The CSIR also uses the legislative framework because it has a tremendous impact on how records must be attained in overall realisation that such records have been created in an organisational setting based on a national legislative and regulatory framework. The participants further alluded that the CSIR always uses the legislative framework for information governance to ensure the authenticity of records and that the CSIR meets the legal requirements for records retention and disposal. They also indicated that the legislative framework ensures that the CSIR, as a public organisation, complies with the national legislative framework drafted and compiled by means of policy and strategic documents.

Electronic Records Management Activities Dealt with by the Legislative Framework

The Legislative Framework also involves details on how organisations manage their electronic records (Marutha, 2019). The policy indicates that electronic records refer to any document that is created electronically – e-mails, minutes or reports. The policy indicates that such records could be stored in the electronic records management system (ERMS) for proper management. Such records could be accessed and retrieved easily when required by the users. The policy further indicates that paper-based records could be digitised and converted to digital records. Many organisations have converted or are in the process of converting their paper-based records into digital records as well as legislative policy stipulating how such a process could be undertaken (Netshakhuma, 2019). The policy also guides on how electronic records could be accessed and retrieved; how records should be stored in the server or cloud and on how electronic records should be maintained.

Six of the respondents confirmed that the legislative framework is used at the CSIR to provide guidelines on the retrieval of records and to ensure that records are secured and saved as confirmed. Five respondents stated that the legislative framework is also used for the creation, storage and maintenance of records. Electronic records refer to records that are created on a computer by, for example, typing and sending emails (Flynn, 2001). The policy indicates the manner in which electronic records should be created, stored, maintained and disposed of at the CSIR. This means that records management practitioners rely on the policy and refer to it to ensure that records are properly managed.

The participants articulated that the CSIR, as a government body, must comply with the National Achieves and Records Service of South Africa Act (Act 43 0f 1996) to ensure that it achieves the principle of sound records management. Therefore, the CSIR has a responsibility of performing its duties, as specified in the Scientific Research Council Amendment Act (Act 71 of 1990). The CSIR further ensures that there is accountability, integrity and principles that come with sound records management by ensuring that records are effectively managed.

The participants also alluded that the legislative framework is used to provide guidance to the CSIR when it comes to meeting all the requirements to ensure that there is sound records management practice. The researcher observed that CSIR records management does not effectively deal with the management of electronic records. The document analysis indicated that the electronic management system does not deal properly with the electronic records management systems.

South African Legislative Framework used to Manage Records at the CSIR

The literature study has shown that South African legislative framework assists institutions in managing their records to such an extent that the employees rendering records management services are accountable (Ngoepe and Saurombe, 2016). According to the literature study, even though the colonial state failed to establish an effective archives and records management framework (Katuu and Van der Walt, 2016) there has been rapid development of such legislative frameworks to be utilised by government and private bodies (Marutha, 2019). Hence, the CSIR uses the National Archives and Records Service of South Africa Act 43 of 1996 and Protection of Personal information Act (Act 4 of 2013), as indicated by the five respondents. The National Archives and Records Service of South Africa Act 43 of 1996 plays a pivotal role in the industry by ensuring that records are effectively managed. Institutions also have to ensure that personal information is protected as they disseminate information among their users.

Four respondents (the majority) indicated that the CSIR uses the PAIA and the Protection of Information Act (Act 84 of 1984). However, the CSIR must ensure that the right to information is not abused by enforcing the Protection of Information (Act 84 of 1984). Only one respondent indicated that the CSIR uses the Constitution of the Republic of South Africa (Act 108 of 1996), the Promotion of Administrative Justice Act (Act 3 of 2000) and the Electronic Communication and Transactions Act (Act 25 of 2005).

Most of the participants articulated that the CSIR uses the following legislative frameworks for records management: The National Archives and Records Service of South Africa Act (Act 43 of 1996), The PAIA, Protection of Information Act (Act 84 of 1984), Protection of Personal Information Act (Act 4 of 2013), ECTA, Scientific research council amendment acts 71 of 1990 and the Copyrights Act 98 of 1978 . A minority of participants also mentioned King 4 reports on corporative governance and Spatial data infrastructure Act 54 of 2003. The researcher observed that the CSIR uses the South African legislative framework to manage the records. The document analysis further revealed that the CSIR uses the South African legislative framework to manage the records effectively.

Utilisation of the Legislative Framework to Manage Records at the CSIR

The legislative framework is used to ensure that organisations in the records management industry develop policies to ensure that there is a records management framework in place when records are managed, and services provided (Netshakhuma, 2019). Organisations use the legislative framework to develop a policy framework that could be used for the effective and efficient management of records (Marutha, 2019). The CSIR also uses the South African legislative framework, such as the NARSSA Act 43 of 1996, to develop policy framework, like the CSIR records management policy, to ensure that their records are properly managed. For electronic records, organisations, such as the CSIR, also use ECTA Act 25 of 2002 as framework to ensure that the electronic records are properly managed. Hence, the CSIR uses the legislative framework for policy development, a records management framework and an electronic system, as stated by four respondents.

The legislative framework plays a significant role in ensuring that records management policies are formulated and specifies how such policies should be implemented. However, a legislative framework is used to implement training for staff in records management, as indicated by three respondents. The legislative framework also indicates how policies should infuse training in how records are managed at the organisations. The researcher observed that the legislative framework is used to develop the CSIR records management policy. The document analysis report further indicated that national legislative frameworks are used to develop the CSIR records

management policy.

Gaps Identified in the Legislative Framework for Records Management

Gaps in the legislative framework will have an impact on the implementation and enforcement of legislations in records management. Gaps in the legislative framework will also affect the quality of records management services the organisation provides (Marutha, 2019; Netshakhuma, 2019). However, the respondents indicated that the policies do not include the compatibility of the electronic records management system. Therefore, the CSIR might not be able to manage its electronic records effectively, since the policy does not clearly cover issues related to the utilisation of ERMS and new technology for records management.

The respondents further indicated there are no enforceable legislations and governance at the CSIR. This might be because there has been a lack of training in how policies are enforced and implemented at organisations. Some respondents indicated they are not sure about the gaps in the legislative framework at the CSIR; and the interviewed participants articulated that there are no gaps in the legislative framework, since it is reviewed via consultations with the public or stakeholders.

Improvement in the Legislative Framework for Records Management

The improvement of the legislative framework will assist the organisations in ensuring that they have well-structured policies in place that will ensure effective and efficient records management (Katuu and Van der Walt, 2016). Legislation often must be improved to ensure there are no gaps that will obstruct the quality of records management services provided by organisations (Ngoepe and Saurombe 2016). Hence, the respondents indicated that the legislative framework should include the adoption and utilisation of a suitable electronic records management system; the CSIR should conduct workshops about the application of a legislative framework in records management; and enforce compliance with the legislative framework by its employees to ensure that they implement the CSIR policy framework for proper records management.

The legislative framework should include

guidelines on implementing ERMS for the proper management of electronic records. However, some respondents are unsure about improvements that could be made to the legislative framework in South Africa. The participants articulated that no improvement to the legislative framework is needed, because legislative frameworks are often reviewed through extensive consultation with the public and records management practitioners in the industry. The researcher also observed that the CSIR records management policy covers important aspects of records management services, since it has recently been revised.

Conclusion

In conclusion, legislation plays an integral role in records management at the CSIR. The CSIR uses legislation, such as National Archives and Records Service of South Africa Act 43 of 1996, Protection of Personal Information Act (Act 4 of 2013), PAIA, Protection of Information Act (Act 84 of 1984) and the Electronic Communication and Transaction Act (Act 23 of 2000) to ensure that records are managed effectively. The CSIR should use the legislative framework to ensure that digital records are completely managed through AI. However, the CSIR must also ensure that legislation is applied and that such legislation is compliant when managing and providing digital records management services. Training intervention and programmes on the application of AI for the management of digital records at CSIR.

Records management practitioners are aware of the legislative and policy framework used to manage records at the CSIR. The legislative framework is applicable to records management practice at the CSIR. The CSIR used the South Africa legislative framework; the National Archives and Records Service of South Africa Act 43 of 1996; the Protection of Personal Information Act (Act .4 of 2013); the Protection of Information Act (Act 84 of 1984) and the PAIA to manage its records. The legislative framework was used to develop the CSIR's policy framework, electronic systems and records management framework.

Recommendations

Based on the findings of this study, the CSIR' legislative framework should include the application of AI for the management of records. The proposed frame work is as follows:

Proposed Framework

This framework is recommended so that it provides guidance to the records management practitioners at CSIR on the policies that can be used to apply AI for the management of records. The study proposed a framework to apply to the legislations as guideline for the utilisation of AI for records management at the CSIR (see figure 4). The framework is based on AI and the South African legislative framework
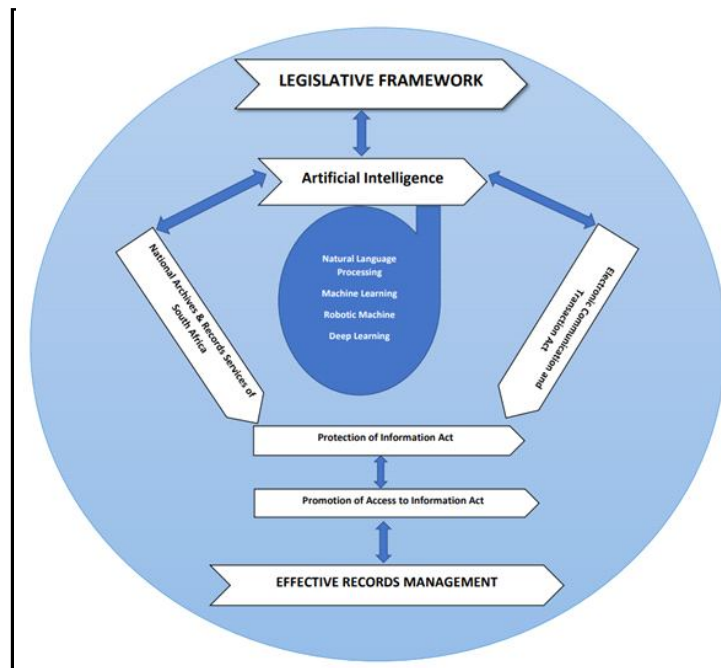
Figure 4: Framework to apply the legislations to utilise artificial intelligence for the management of records

This model articulates legislations that can be applied to use AI for records management at the CSIR in South Africa. The legislations emanate from the Constitution of South Africa, 1996. These are the legislations that can guide when applying and using AI for records management at the CSIR. Such legislations include the National Archives and Records Services of South Africa, for the effective management of records. However, AI and robotics should be infused in South African legislations to ensure that such technological resources are used effectively for records management. Legislations such as the Protection of Personal Information Act, Protection of Information Act, Electronic Communication and Transaction Act and the Promotion of Access to Information Act can also infuse AI to ensure that as much as possible information is provided, but that such information is protected through encrypted security passwords. If infused and applied properly in the South African legislations, AI and robotics will assist in providing effective records management services at the CSIR in South Africa.

which are known to guide the management of information or records.

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Motivational Strategies and Physical Work Environment as Correlates of Job Performance of Library Workers in Colleges of Education, South-West Nigeria

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Abstract

This study, investigated motivation strategies and physical work environment as correlates of job performance of library workers in colleges of education located in South-West Nigeria. The study adopted survey research design. Based on total enumeration, 210 library workers in colleges of education in South-West Nigeria were used. Data was collected using a self-constructed instrument on Motivation Strategies Physical Work Environment and Job Performance (MSPWEJP). A total of 192 library workers returned the questionnaire administered, and were used for analysis. The overall Cronbach alpha for the scale is 0.873 indicating good internal consistencies among the variables. Three research questions were answered and two hypotheses was tested at 0.05 level of significance. Data were analysed using descriptive and inferential statistics. It was established that motivation and physical work environment were essential elements that improved the job performance of library workers in colleges of education in South-West Nigeria. The finding revealed that motivation and physical work environment have positive effects on job performance (B=0.242, p-value < 0.05), (B=0.102, p-value < 0.05) and relative influence of motivation and physical work environment [(F (2,189) = 35.340; p<0.05)] respectively. It was recommended that motivational strategies applied by the college management and the physical working facilities jointly provided paved a good way for library workers' job performance in colleges of education, South-West Nigeria and that these metrics be maintained.

Introduction

Workers are the engine of any performing organisation. This can be attested to in the way they are appraised, recognised and treated among other organisational resources such as land and capital (Nurse, 2016). This invariably implies that their performance on the job is a fundamental aspect of the performance of the organisation. The performance of individuals in various departments of an organisation could be summed up as aggregates to the total performance of the organisation. Thus, organisations should ensure the promotion of individual job performance to enhance organisational strength, growth, processes, profit margin and overall performance.

Job performance is the discharge of statutory duties or functions based on the workers' field of specialisation. The performance of statutory duties is geared towards the attainment of an organisation's objectives. According to Austin, 1991, cited in Villamova, Austin and Borman, 2015, job performance is regarded as that aspect of work behaviour domain that is of relevance to the job and the organisation's objectives. It, however, could be summarised that the primary objective of any organisation or institution is to attain a high level of productivity which can only be achieved if the overall job performance of the entire workers' is enhanced. Job performance consists of distinct sets of activities that an individual contributes to the organisational goals and aspirations in diverse ways.

One of the qualities of job performance in an organisation is having the spirit of teamwork, which is regarded as a well-oiled machine to get tasks or projects done. Teamwork is important because it encourages collective fulfillment and enlarges the scope of the work performed on a daily basis. When colleagues work collectively, either on specific team-related tasks or in various departments, it improves productivity, morale and overall quality of product or service. Studies have indicated that working relationships is a basic management responsibility essential for each employee, irrespective of whether or not the staff is less than ten people or greater.

Work environment can be described as the interrelationship that exists among the employees, the employers and the environment where work is carried out. Features that constitute the work environment include the workers' relationship, management, organisational structure, communication between employees and management, working tools, office layout, temperature, noise level, ventilation and furniture (Lane, Esser, Hostle and Anne, 2010). An adequate combination of all these features makes the work environment conducive. Such an environment provides the best possible working conditions necessary for workers to work with a high level of performance (Agbozo, Owuzu, Hoedofia and Atuakrah, 2017). Basically, the work environment is expected to be conducive and hazard free and relatively peaceful. However, the work environment can be hostile and inhospitable. Such a work environment is found with inadequate facilities and unprogressive work practices.

Jane and Kaur (2014) point out that enabling a work environment makes workers perform very well on assigned duties, which influences the growth of the organisation. The work environment is sub-divided into four categories, namely: psychological work environment, organisation work environment, social work environment and physical work environment (Oludeyi, 2015). The work environments are categorised based on the distinct features found in each of them. The organisational work environment includes: procedures, practice, ethics and philosophies which operate under the control of an organisation. The social work environment consists of how workers interact with each other. When colleagues in a workplace get along well and do not have bad feelings towards each other, they can be more effective in collaborating and delivering high-quality services for the library.

Haynes (2013) opines that the physical work environment of organisations falls into two main categories. These are the office layout (open or closed offices) and office comfort (matching the office environment to the work processes). The physical work environment affects how employees in an organisation interact, perform their tasks, and are led. The physical library work environment stimulates employees' morale, productivity and service engagement both positively and negatively and it may largely affect physical and psychological well-being. The physical work environment is a significant factor that keeps employees together while the environment supports their output. The physical work environment is different, diverse, and constantly changing. These include; lighting, cross ventilation rates, access to natural light and the acoustic environment. The presence of these physical structures inspires employees' behaviours, attitudes, satisfaction, performance and productivity. Oyedum (2012) avers that an ideal conducive working environment involves lightning, furniture, noise-free reading areas and good ventilation which should be adequately provided to enhance job performance.

With the trend in the physical structure in an organisation, the physical work environment continues to change rapidly. That is, the office layout and structural design suggest a symbolic work environment that encourages performance (Challenger, 2010). These changes encourage efficient working relationships and flexible workplaces that offer good access and ease of

communication compared to enclosed private offices. Chandraseker (2011) also affirms that the insecure and unhealthy work environment in terms of poor ventilation, inappropriate lightning, excessive noise discouraged workers' job performance and health. The influence of environmental factors on the job performance of library workers could be great. For instance, library workers whose offices are connected to the Internet could access information with ease and get relevant information as quickly as possible for its users. This could enhance the job performance of such library workers. When a library worker is sure of constant power supply, such a library worker can avail himself of the opportunity to do extra work in the office. The job performance of such library workers would, under normal circumstances, increase and vice-versa. In other words, a conducive office environment could influence the job performance of library workers.

Library workers in the colleges of education are expected to provide professional services for the actualisation of the mission of the parent institutions. They are supposed to be highly productive and dedicated to their jobs. Library workers may be professionals, para-professionals and supporting staff. They are basically employed to provide services that will meet people's information needs. Therefore, the high productivity of library workers would justify the essence of the continuous existence and relevance of the library as an information provider in the face of the global competitive information industry. For library workers to be productive, the College Authority and Library Management are supposed to provide an enabling working environment that could optimise the productivity of the library workers. When this is done, employees' performance will certainly increase, and the goals and aspirations of the organisation will be sustained. A cursory look at the role of motivation and physical work environment as discussed above, points to the fact that when they are implemented, they are expected to greatly influence job performance of workers in Colleges of Education in Nigeria. However, in the library organisation today, there is still observable poor job performance among workers in various institutions. This negative disposition of the workers may not be unconnected with motivation as well as the poor physical work environment. Thus, this study will examine motivational strategies and physical work environment as correlates of job performance of library workers in Colleges of Education in South-West Nigeria.

Literature Review

Job performance is the discharge of statutory duties or functions based on the workers' field of specialisation. The performance of statutory duties is geared towards the attainment of an organisation's objectives. Job performance varies from one organisation to another. For instance, jobs carried out in a bank include: receiving and payment of cash to clients, balancing of money owned, management of bank records, and so on. Jobs performed in the library encompass cataloguing and classification of materials, provision of reference services, charging and discharging of library materials to users. Job responsibilities of personnel in the library as per professional staff include online selection, ordering and acquisition, automated circulation of information resources, online public access catalogue, providing online reference services and digitization of information resources

One of the survival strategies of any organisation is decided by the way the workers are remunerated and rewarded (Lawler, 2013). The pattern of reward and motivation will also determine the level of employees' commitment and their attitude to working toward achieving progress. As noted by Dixit and Bhati (2012), poor motivation applications have been a prime component affecting employees' commitment and performance. However, for any organisation to achieve its objectives in any competitive society, employers of labour must have a thorough understanding of what drives the employees to perform efficiently and reward them accordingly (Mueller, 2011). Besides, employees must be adequately motivated through best enumeration plans and reward systems and this will invariably encourage them to be proactive and have the right attitude to work, thereby promoting organisational productivity (Armstrong, 2008). However, in a highly dynamic organisation, motivational strategies are deployed by employers of labour to ensure that the best brains are retained in the best interest of the organisation (Nelson, 2014).

A recent survey conducted by Klynveld Peat Marwick Goerdeler (2010), a consultancy firm on

job security, found that more than 75% of participants considered job security their top priority when searching for a job as a result of the uncertainty economic environment. The result also showed that 67% of the participants were more likely to work in a public organisation rather than a corporate business where there is no assurance of their job security. Bitagi and Idris (2017) investigate the effect of motivation on job performance of library staff in academic institutions in Niger State in Federal University of Technology The study showed that salary/wages, job security, work itself, cordial relationship among staff; delegation of responsibility, proper communication, mentoring staff and annual/ casual leave enhance job performance.

Hassan (2010) reported that the House of Representatives in Nigeria has passed a bill seeking to establish an employee compensation fund that will cater for the welfare of Nigerian workers. Jiboku (2009) carried out similar research on the effect of motivation and hygiene on job performance among a group of 75 agricultural extension workers in Nigeria. The study adopted Herzberg, et al. (1966) theory of motivation that influences job satisfaction and leads to better performance. Similarly, Centres and Bugental (2010) conducted research based on Herzberg's two-factor theory of motivation, which separated job variables into two groups: hygiene factors and motivation factors. The sample size of 692 was used to test the validity of the two-factor theory. The result reported that at higher occupational level, "motivation" or intrinsic job factors were more valued, while at lower occupational levels, "hygiene factors" or extrinsic job factors were more valued. From this finding, it was concluded that an organisation that satisfies both intrinsic and extrinsic factors of workers get the best out of them.

Egwuridi (2013) also investigated motivation among Nigerian workers using a sample of workers at high and low occupational levels. The expectancy obtained showed that higher income workers will place a greater value on job performance than low-income workers. This emphasises the extent to which value is placed on extrinsic job factors. Akerele (2009) observed that poor remuneration is related to profits made by the organisation. The report indicates that wage differentials between high and low-income earners were related to low morale, lack of commitment and low productivity. To further prove

motivation as a correlate of employees' performance, Huang and Lai (2014) carried out a study on the effect of motivation system on job performance in the tourist hotels in Taiwan identified a positive relationship between effective incentive system and job satisfaction, which ultimately results in improved job performance of employees.

Furthermore, Alfandi and Alkahsawneh's (2014) studied the role of motivation and reward in enhancing employees' performance at Jordanian Travel and Tourism Institutions. The study revealed that adequate motivation is essential for improving employees' performance and organisation productivity. Importantly, the study specifically revealed that the motivation and reward systems in these organisations were grossly inefficient despite employees' high job performance. The study recommended adequate motivation, to be given as when due, and based on performances in order to inspire them to do their best. Ejike (2013) conducted a study on the impacts of employee recognition on organisational productivity, using senior employees from selected firms in Anambra State. Findings of the study indicated that employee recognition is one of the non-monetary rewards which have the capacity to influence the employees' behaviours for optimum performance, because it gives them a sense of relevance and makes them feel valued.

Similarly, Erratul, Nur, Munirah and Norlida (2016), studied factors that influence employees' performance in the Islamic Religious Council. The objective of the study was to identify and determine if there is any relationship between intrinsic rewards and employee performance. For this research, the choice of sample was based on the convenience sampling technique. The instrument used in the research was a questionnaire. The finding indicated that there is a positive relationship between reward motivation with employees' and job performance. However, other findings indicate that intrinsic reward factors have more influence on employees' performance than extrinsic reward factors. Therefore, both the reward factors have a positive relationship and significant results and also influence employees' performance. The results from this study provided useful information to employees in that particular organisation.

The physical work environment deals with the physical or tangible facilities available where the job is done. It includes; machinery, office layout,

temperature, ventilation and lighting. It also includes noise level (Agbozo *et al,* 2017). Kyko (2010) highlighted working conditions such as hot and noisy working environment, unsafe work surroundings, dirty work environment, inadequate resources, old equipment and technology as factors constituting an unconducive physical work environment. Employees who work in better quality lighting are likely to create faster work with fewer errors. Yaya (2016) identified the lack of working tools and uncomfortable office design as factors contributing to a poor work environment. Conducive work environments facilitate optimum performance of employees by providing them with the means to make best use of their skills and available resources to provide high-quality service (Leshabari, Muhondwa, Mwangu and Mbembati, 2010).

Omotayo, Pavithra and Adeniji (2010) emphasised that there are many environmental factors determining workers' job performance in developing countries. Among such factors are; infrastructure, institutional policy on ICT resources development, technology supply problems, adequate human resources, education and training, and economic and social factors. Thus, in order to draw users to the library, librarians are advised to look at their environment and improve on it to reduce levels of stress and anxiety of their users (Kiilu and Otike, 2016). A study by Amusa, Iyoro and Olabisi (2013) on the impacts of physical work environments on job performance of librarians in the public universities in Southwest Nigeria, established that the performance of library personnel is largely determined by the presence of a conducive physical work environment. Findings of the study further revealed that library personnel in Nigeria work in a fairly conducive environment. Indicators as shown by respondents' opinions include physical facilities, open communication systems, participatory management and staff development.

Similarly, a library worker who works in an office that is well illuminated could be more productive than his professional colleague who works in an office that is renowned for constant erratic power supply. This is because the former would find it easier to do a given task with the hope of completing it without any fear of power failure. A library worker who is sure of stable power supply could also wait and do extra work in his office than his colleague who does

not enjoy the same privilege. The library routines, library physical work environment, the infrastructural facilities, the visible and invisible social interactions, are some of the factors that could influence the job performance of library workers. More typically, however, studies have established that the physical work environment has a significant influence on the performance of library personnel. Library workers usually spend a substantial part of their time providing information sources and services to library users.

The work place or environment can impede or enhance the productivity of librarians whose jobs require comfortable, conducive, and congenial environments. Kampert (2012) averred that employers who pay attention to all the details that affect the welfare of their workers, including their physical work environment, are likely to retain the best people, save costs, and improve the productivity of their workers. Also, Sakir and Fajonyomi (2010) identified clean environment as part of the incentive package that can be given to workers. Ndagana (2013) also noted the indispensability of a fine environment to the output of workers by emphasising that the work place is one of the major focuses of evaluation of self. As a result, the physical working environment is likely to dampen employees' moral, and, as a consequence, contributes less to the total organisational output. Edwards and Fisher (2012), while commenting on the library's physical work environment, stated that there should be a balance between naturally ventilated libraries with fresh air and sunshine. The library's internal and external environment should also be aesthetically inviting. Also, Kisiedu (2010) recommended that libraries should be attractive in their physical beauty and general ambience as this could attract more users. Iyoro (2015) noted that investigations have demonstrated that, when workers are given the necessary good office layout they require, they display maximum willingness in the discharge of their duties.

Studies by Folorunso and Njoku (2016) agreed that, the quality of comfort derivable from the physical work environment determines the level of satisfaction and productivity of workers. An environmental factor is considered important and they include anything that may influence any of the five senses of sight, sound, smell, touch, and taste. As an example, standard health facilities will guard the lives of the workers. Ong, Lai and Wang (2009) categorised the environmental factors into four, namely connectivity

infrastructure, costs and physical infrastructure and internet connectivity. He further highlighted that in Nigeria, physical infrastructure and connectivity infrastructure ranked as the highest environmental constraints to effective job performance. In his study of the physical work environment and workers' performance in Lagos, Taiwo's (2009) finding showed that, the physical work environment is poor (as indicated by 42.63% of respondents). A majority of the respondents (70.49%) were of the opinion that high pay, conducive and better physical work environment could lead to improvement in their performance.

Ikonne and Yacob (2014) studied the impact of spatial comfort and environmental workplace ergonomics on the job satisfaction of librarians in the Federal and State University libraries in Southern Nigeria. The study adopted the survey research design. The findings revealed that there was a positive relationship between ergonomics (spatial comfort and environmental workplace factors) and job satisfaction, which could result in performance. It was recommended that ergonomic measures be introduced and applied in the design of spatial comfort and environmental workplace factors in the libraries for greater job satisfaction of the library staff in Nigerian University libraries.

In summary, the literature reviewed is therefore relevant to this study because it not only identified what constitutes motivation and physical work environment, but equally established that both are determinants of employees' job performance, which is the hub of this study. Thus, motivation combined with a good physical work environment enables library workers to perform these functions satisfactorily in order to achieve the purpose of the library, without which they would be dissatisfied, leading to poor performance. The objectives of this study are to:

1. determine the level of job performance of library workers in colleges of education in South-West of Nigeria;

2. examine the level of motivation of library workers in colleges of education in South-West of Nigeria;

3. assess how conducive the physical work environment of library workers in colleges of education in South-West of Nigeria;

Research Questions

1. What is the level of job performance of library workers in colleges of education in South-West Nigeria?

2. What is the level of motivation of library workers in colleges of education in South-West Nigeria?

3. How conducive is the physical work environment of library workers in colleges of education in South-West Nigeria?

Research hypothesis

Ho$_{1:}$ The combination of the independent variables (motivation and physical work environment) has no joint significant influence on the job performance of library workers in colleges of education in South-West Nigeria.

Ho2: The combination of the independent variables (motivation and physical work environment) has no relative significant influence on the job performance of library workers in colleges of education in South-West Nigeria.

Methodology

Survey research design of correlational type was used for this study. This study focused on colleges of education in South-West Nigeria. Thus: Federal College of Education, Abeokuta, Ogun State; Federal College of Education (Special), Oyo; Federal College of Education (Technical), Akoka, Lagos State; Adeyemi College of Education, Ondo; College of Education, Ila-Orangun, Osun State and; College of Education, Ikere, Ekiti constitute the population of the study. However, one College of Education was chosen as a representative of each state in the Southwest. The target populations of the study consist of staff working in the library, that is, the professionals and non-professionals and the supporting workers. The population consists of 57 librarians and 153 senior and junior staff, making 210 in all. The survey research was carried out in 2018. Considering the size of the population of the study, total enumeration was employed to cover the entire population in the South-West geopolitical zone of Nigeria. The instrument used in collecting data for this study is both an adapted and a structured questionnaire. The overall Cronbach alpha for the scale is 0.873, indicating good internal consistencies among the variables. On the whole, 210 copies of the questionnaire were administered. The questionnaire

was administered by the researcher tagged Motivation Strategies and Physical Work Environment and Job Performance (MSPWEJP).

The data for this study was analysed using descriptive statistics such as frequency count, simple percentages method, mean and standard deviation. Each research question was analysed using mean and standard deviation. The hypotheses were analysed using multiple regression analysis.

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The data for this study was analysed using descriptive statistics such as frequency count, simple percentages method, mean and standard deviation. Each research question was analysed using mean and standard deviation. The hypotheses were analysed using multiple regression analysis.

Findings

On the whole, 210 copies of the questionnaire were administered out of which a total number of 192 copies were retrieved. This gives a 91.4% return rate of the administered research instrument for the study. The administration of data was done in three weeks.

Table 1: Level of job performance of library workers.

S/N	Statements	VHL (%) 4	HL (%) 3	ML (%) 2	LL (%) 1	M	SD	AM
	Job effectiveness							**3.30**
1	I am effective in providing a clearly specified task in my workplace	88 (45.8)	89 (46.4)	13 (6.8)	2 (1)	3.37	0.66	
2	I perform my work effectively in the library without any pressure	85 (44.3)	82 (42.7)	23 (12)	2 (1)	3.30	0.72	
3	I exhibit high level competency in delivering effective service to the clientele	68 (35.4)	111 (57.8)	12 (6.3)	1 (.5)	3.28	0.60	
4	I often get my job done properly in good time at the least cost possible	78 (40.6)	90 (46.9)	20 (10.4)	4 (2.1)	3.26	0.73	
	Teamwork							**320**
5	Friendliness with colleagues in workplace increases my job performance	77 (40.1)	98 (51)	13 (6.8)	4 (2.1)	3.29	0.69	
6	Teamwork allows increase productivity and efficiency	76 (39.6)	95 (49.5)	16 (8.3)	5 (2.6)	3.26	0.72	
7	I easily accomplish my task whenever there is a group assignment	68 (35.4)	91 (47.4)	31 (16.1)	2 (1)	3.17	0.73	
8	I am satisfied with the procedure in which grievances are handled at my place of work.	62 (32.3)	92 (47.9)	32 (16.7)	6 (3.1)	3.09	0.78	
		Overall mean=3.29						

Key: Very High Level (VHL), High Level (HL), Moderate Level (ML), and Low Level (LL)

Decision Rule: 1-1.4 = LL (Low Level), 1.5-2.4 = ML (Moderately Low), 2.5-3.4= HL (High Level), while 3.5-4.0 = VHL (Very High Level) the criteria mean =2.50 that is 4+3+2+1=10 ÷ 4 = 2.5. This implies that any score less than 2.5 is considered low level.

Table 1 shows the expression of opinion by library workers on the level of job performance. The overall mean score is 3.29 on the scale of 4, which indicates a high level of job performance. Job effectiveness had an overall mean of 3.30 which indicates that, on average, the respondents agree with most of the statements on a high scale as it relates to the job effectiveness of library workers. The analysis shows that the 'effectiveness in providing a clearly specified task in their workplace' had a mean score of (mean=3.37) indicating dispositions. The respondents also indicated that there is a high level of effective performance without any pressure (mean=3.30) and exhibited a high level of competency in delivering effective service to the clientele (mean=3.28). With regard to teamwork, the overall mean score is 3.20 which indicates that, on the average, respondents agreed that there is a high level of teamwork among library workers. On individual questions, 'high level of friendliness with colleagues in the workplace increases job performance' had mean=3.29; the 'teamwork allows increased productivity and efficiency' had a mean=3.26, 'I easily accomplish my task whenever there is a group assignment' had a mean=3.17, and the process in which grievances are settled in the workplace had mean=3.09. The mean scores indicate that respondents agreed to a high level on these statements. It can, therefore, be inferred that the job performance of these library workers in colleges of education in South-West, Nigeria is high.

Table 2. Level of motivation of library workers

S/N	I am motivated with the following:	VHL (%) 4	HL (%) 3	ML (%) 2	LL (%) 1	M	SD	AM
1	Regular payment of salary	78 (40.6)	74 (38.5)	31 (16.1)	9 (4.7)	3.15	0.86	**2.89**
2	Job security in the library	66 (34.4)	75 (39.1)	43 (22.4)	8 (4.2)	3.04	0.86	
3	Proper communication that exists between management and library workers	59 (30.7)	80 (41.7)	49 (25.5)	4 (2.1)	3.01	0.81	
4	Free expression of employees at workplace	62 (32.3)	73 (38)	51 (26.6)	6 (3.1)	2.99	0.85	
5	Elated whenever I get promoted at the appropriate time	55 (28.6)	93 (48.4)	32 (16.7)	12 (6.3)	2.99	0.84	
6	Provision for psychological and basic needs	66 (34.4)	62 (32.3)	59 (30.7)	5 (2.6)	2.98	0.87	
7	The developmental policy which is applicable to all library workers	56 (29.2)	79 (41.1)	52 (27.1)	5 (2.6)	2.97	0.82	
8	Morale booster for efficient service	53 (27.6)	72 (37.5)	58 (30.2)	9 (4.7)	2.88	0.87	

Key: Very High Level (VHL), High Level (HL), Moderate Level (ML), and Low Level (LL)

Decision Rule: if mean falls between 1-1.49= Low Level, 1.5-2.49=Moderate Level, 2.5-3.49=High level, 3.5-4= Very High Level

Table 2 shows the level of work motivation of library workers in colleges of education in South-West Nigeria. The overall mean score of 2.89 on the scale of 4 which indicates a high level of motivation. The results show that regular payment of salary was considered high with a mean score of 3.15, job security (mean=3.04), proper communication that exists between management and library workers (mean=3.01), "free expression of employee at workplace" (mean=2.99), "morale booster for efficient service" (mean=2.88) and "recognition for personal contribution to the library growth" (mean=2.87) had high mean scores which indicates that majority of the respondents on average were in agreement with the statements on a high dispositions. Thus it can be inferred that workers will be motivated if those indicated criteria are met.

Table 3: Physical work environment of library workers

S/N	Physical Work Environment	SA (%)	A (%)	D (%)	SD (%)	M	SD	AM
1	I enjoy conducive and friendly environment	68 (35.4)	87 (45.3)	32 (16.7)	5 (2.6)	3.14	0.78	**2.98**
2	I comfortably share innovative ideas with co-workers because of the welcoming response I get from them	58 (30.2)	102 (53.1)	27 (14.1)	5 (2.6)	3.11	0.73	
3	My office is spacious and comfortable	74 (38.5)	73 (38)	33 (17.2)	12 (6.3)	3.09	0.90	
4	The conducive working environment in the library allows for high performance.	64 (33.3)	87 (45.3)	34 (17.7)	7 (3.6)	3.08	0.81	
5	My office illumination is very good	67 (34.9)	77 (40.1)	42 (21.9)	6 (3.1)	3.07	0.83	
6	Prompt use of office equipment allows workers to put more effort	59 (30.7)	90 (46.9)	39 (20.3)	4 (2.1)	3.06	0.77	
7	Adequate safety and comfort of my work environment is sure	47 (24.5)	110 (57.3)	28 (14.6)	7 (3.6)	3.03	0.73	
8	I am satisfied by the library routine activities	51 (26.6)	103 (53.6)	30 (15.6)	8 (4.2)	3.03	0.77	
9	I enjoy working because I have adequate tools to work with	53 (27.6)	93 (48.4)	39 (20.3)	7 (3.6)	3.00	0.79	
10	I have comfortable tables and chairs to work with.	63 (32.8)	77 (40.1)	39 (20.3)	13 (6.8)	2.99	0.90	
11	Owing to unreliable power supply in the library, it affects my performance	50 (26)	69 (35.9)	59 (30.7)	14 (7.3)	2.81	0.91	
12	My office is noisy; I can't concentrate on my job	36 (18.8)	75 (39.1)	43 (22.4)	38 (19.8)	2.57	1.01	

Key: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

Decision Rule: if mean falls between 1-1.49=Strongly Disagreed, 1.5-2.49=Disagreed, 2.5-3.49=Agreed, 3.5-4= Strongly Agreed

Table 3 presents information on the physical work environment of library workers as regards their level of job performance in colleges of education, South-West, Nigeria. The respondents agreed that they enjoyed a conducive and friendly environment (mean=3.14), they willingly shared innovative ideas with co-workers because of the welcoming response they got from them (mean=3.11) and the office was spacious and comfortable (mean=3.09). These responses imply that library workers operated in a conducive work domain in colleges of education, South-West Nigeria. The finding may be attributed to the recent changing phases in infrastructure development of colleges of education in South-West Nigeria through the Tertiary Education Trust Fund Intervention (TETFund) grants. The finding concurs with that of Bankole, Aremo and Oderinde (2017) on the composite (joint) and relative effect of the physical work environment on employees' overall performance in selected tertiary institutions in Lagos State. The findings emphasized that the five (5) factors of physical work environment (office space, ventilation, lighting, noise and furniture), which constituted the independent variables, jointly predicted high employees' performance of the respondents (R=0.62). The finding implies that management provides an atmosphere that encourages a comfortable working environment that encourages job performance of library workers in colleges of education, South-West Nigeria. However, the respondents indicated that they were worrisome about the level of power supply in the library (mean=2.81) and the level of noise in the library environment (mean=2.57), which could be an impediment to job performance.

Test of Hypothesis

In order to provide answers to the research hypotheses stated, the following data shown in Table 4 and 5 were collected and carefully analyzed using regression statistics.

Hypothesis 1: This hypothesis states that a combination of the independent variables (motivation and physical work environment) has no joint significant influence on job performance of library workers in colleges of education in South-West, Nigeria.

Table 4: Multiple Linear Regression Showing Combined significant influence of Motivation and Physical Work Environment on Job Performance of Library Workers in Colleges of Education in South-West, Nigeria

Coefficients					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
	B	**Std. Error**	**Beta**		
1 (Constant)	2.348	.186		12.624	.000
Motivation	.242	.059	.329	4.086	.000
Physical work environment	.102	.071	.116	1.444	.150

a. Dependent Variable: **Job Performance**

ANOVA[a]					
Model	**Sum of Squares**	**DF**	**Mean Squares**	**F**	**Sig.**
1 Regression	7 .922	2	3.961	18.586	.000[b]
Residual	40.281	189	.213		
Total	48.203	191			

R=0.405
R^2=0.164
Adjusted R^2=0.156

Sig. at p < 0.05

Table 4 shows the regression and analysis of variance (ANOVA) for the regression, the F-value of 18.586 and p-value of 0.000 (significant at 0.05 level). This implies that the combined influence was significant. It shows that motivation and physical work environment have positive effects on job performance (B=0.242, p-value < 0.05), (B=0.102, p-value < 0.05) respectively. Table 4 also indicates that the two independent variables when combined to determine their influence on job performance of library workers in colleges of education in South-West Nigeria yielded a coefficient of multiple correlation (R) =.405 and a coefficient of determination adjusted (R^2) =.164, which is significant at 0.05 level. This implies that the independent variables, (motivation and physical work environment) have jointly significantly determined the job performance of library workers in colleges of education in South-West Nigeria. Therefore, the stated hypothesis is rejected, meaning that there is a strong influence of motivation and physical work environment on job performance.

Hypothesis 2: This hypothesis states that a combination of the independent variables (motivation and physical work environment) has no relative significant influence on job performance of library workers in colleges of education in South-West, Nigeria.

Table 5: Multiple linear regression analysis of the relative influence of motivation and physical work environment on job performance of library workers in colleges of education.

	β	T	Sig.	R^2	Adj. R^2	F	ANOVA (Sig.)
(Constant)		18.349	.000	0.270	0.260	35.340	0.000
Job motivation	.512	7.380	.000				
Physical work environment	.021	.297	.767				
Dependent Variable: Job performance							
Predictor: Job Motivation, physical work environment							
DF (F-Statistic) = 2, 189**DF (T-Statistic)** = 188							

Sig. at p < 0.05

The joint influence of motivation and physical work environment in the regression model jointly predicted job performance of library workers in colleges of education in South-West Nigeria.

Specifically, the finding reveals the relative influences of each of the independent variables on the dependent variable ($F(2,189) = 35.340$; $p<0.05$). This revealed that motivation ($\hat{a}$=0.512; t (188)=7.380; $p<0.05$) had a positive moderate significant influence on the job performance of library workers in colleges of education in South-West Nigeria. By implication, the physical work environment ($\hat{a}$=0.021; t (188) =0.297; $p>0.05$) did not significantly influence job performance of library workers in colleges of education. In addition, the two variables jointly account for 26.0% (Adj R^2= 0.260) of the variance in job performance of library workers in colleges of education. Therefore, the null hypothesis which states that motivation and physical work environment have no relative significant influence on job performance of library workers in colleges of education in South-West Nigeria was rejected by this finding. This implies that motivation and physical work environment have a relatively significant influence on the job performance of library workers in colleges of education in South-West Nigeria.

Discussion of Findings

The result shows the expression of opinion by library workers on the level of job performance. The respondents indicated that there is a high level of effective performance without any pressure (mean=3.30) and also exhibited a high level of competency in delivering effective service to the clientele (mean=3.28). The respondents agreed that there is a high level of friendliness with colleagues in the workplace that increases job performance' among workers. The finding indicated that workers easily accomplished task whenever there is a group assignment (mean=3.17). This also corroborates Benrazavi and Silong (2013) who agreed that variables which include teamwork and task accomplishment are germane to improving the degree of job performance of workers in any library, which in turn determines the level of productivity.

The finding revealed that respondents were motivated by regular payment of salary and such could inspire job performance of library workers. This finding is in consonance with Tella, Ayeni and Popoola (2011) that money remains the most significant inspiration strategy for organisation achievement. Also, Mahmed and Nahu (2015) agreed that financial motivation are tools for inspiring employees to job performance of the libraries in tertiary institutions in Borno State, Nigeria. This finding concurred with Aarabi, Subramaniam and Akeel (2015) who affirmed the positive relationship existing between motivational factors such as training, salary, fringe benefits, promotion and job performance of Malaysian workers.

Job security was also rated as a high motivator in colleges of education, South-west, Nigeria. This corroborates the findings of Bitagi and Idris (2017) who investigated the effect of motivation on job performance of library staff in academic institutions in Niger State at Federal University of Technology, Minna. The study showed that salary/wages, job security, work itself, cordial relationship among staff; delegation of responsibility, proper communication, mentoring staff and annual/casual leave enhance job performance.

The respondents agreed that they enjoy a conducive and friendly environment which encourages higher level job performance. This is in line with Ikonne and Yacob (2014), who studied the impact of spatial comfort and environmental workplace ergonomics on the job satisfaction of librarians in the federal and state university libraries in Southern Nigeria. This finding is also supported by Taiwo (2010), who studied the influence of the physical work environment on workers' performance in Lagos, Nigeria and reported that the physical work environment greatly influences employees' performance. All these show that a conducive atmosphere encourages safety and comfort of working conditions with skill and talent development among library workers.

The hypothesis shows the regression and analysis of variance (ANOVA). For the regression, the F-value of 18.586 and p-value of 0.000 (significant at 0.05 level). This implies that the combined influence was significant. It shows that motivation and physical work environment have positive effects on job performance (B=0.242, p-value < 0.05), (B=0.102, p-value < 0.05) respectively. The two independent variables when combined to determine their influence on job performance of library workers in colleges of education in South-West Nigeria yielded a coefficient of multiple correlation (R) =.405 and a coefficient of determination adjusted (R^2) =.164, which is significant at 0.05 level.

The hypothesis indicated that the two independent variables when combined to determine their influence on job performance of library workers in colleges of education in South-West Nigeria have a significant influence on job performance. Therefore, the hypothesis was rejected. The finding reveals a relative influence of motivation and physical work environment on job performance of library workers in colleges of education in South-West, Nigeria (F $(2,189) = 35.340$; $p < 0.05$). The two variables relatively explain 27.0% of job performance of library workers in colleges of education in South-West Nigeria, leaving about 73.0% to other variables not considered in the model. By implication, motivation and physical work environment relatively play important roles in influencing the job performance of library workers in colleges of education in South-West Nigeria.

Conclusion

It was established from the study that motivation and physical work environment are seen as essential

elements that can improve the job performance of library workers in colleges of education in South-West, Nigeria. This was evidence from the positive response of the respondents. According to the findings of the study. It was discovered that combining all of the variables (motivation, physical work environment, and other known variables) helps staff in the library to attain the optimal results. There is more top-down encouragement from their institution's administration couple with the motivating elements that are important to library employees' job success.

Recommendations

 In view of the findings of this study, the following recommendations are proffered:

- The results revealed that motivational techniques used by college administration paved the way for library staff in South-West Nigeria to do well on the job, and that this must be maintained by college administrators.

- The results showed that reasonable environmental standards, such as cross ventilation, comfortable tables and chairs, could be found in colleges of education in South-West Nigeria. As a result, college administrations should preserve these defined environmental variables and deem them a priority for cultivating an inherent drive for knowledge creation in educational institutions.

- The findings revealed that there was variation in electric power generation, which might pose a challenge in achieving job efficiency and needs to be addressed.

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Socio-economic Characteristics and Access to Agricultural Information in Public Libraries among Smallholder Farmers in South-East Nigeria

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Abstract

The main source of new information for smallholder farmers ought to be the public library. It is pertinent that new information on agricultural practices is deposited in such libraries as frequently as they are created. The broad objective of this study is to investigate the effect of socio-economic characteristics of smallholder farmers on access to agricultural information and the rating of public library services in South-East Nigeria. This becomes paramount given the volume of new agricultural information, low socio-economic characteristics of smallholder farmers and the expected role of public libraries as the main source of information for rural dwellers. A multistage sampling was adopted resulting to a sample size of 355. Structured questionnaire was used for data collection and data on some economic characteristics were presented using bar charts. The analysis was done using regression method, means and standard deviation. The predictability of frequency of access by socio-economic variables was very high (R^2 = 87.2%) with the identified variables as age, gender, education, farmer experience, membership of farmer association, size of farmland, average annual income, and type of farming as significant (P < 0.05). The result shows the mean rating of public libraries in all the services by smallholder farmers as being poor.

Introduction

Agriculture has contributed significantly to Nigeria's economy and the livelihood of her people. The decline in its share in the gross domestic product (GDP) over the years due to the discovery of oil notwithstanding, it still remains a very important sector in Nigeria. According to Oyaniran (2020), agriculture contribute on average 24% to the nation's GDP over the past seven years (2013 – 2019) and accounted for less than 2% of total export relative to crude oil (76.5%) in 2019. Federal Ministry of Agriculture and Rural Development (2016) has it that, Nigeria is facing two key gaps in agriculture one of which is the inability to meet domestic food requirements and the inability to export at quality levels required for market success. The author noted that this has made Nigeria to still import a significant amount of food and also not earn significant foreign exchange from agriculture. The implication is that Nigeria is neither satisfied with the local food production nor the foreign exchange earnings.

Kaldor (1970) emphasised that growing exports is the focus for development and Feder (1982) as cited in Igwe, Ede and Ukpere (2015) reasoned that "export creates positive externalities by employing a more efficient institutional structure and production methods". The poor nature of Nigeria's GDP and export of agricultural product notwithstanding, agriculture has been very significant in terms of employment generation, as about 70% of the population lives in rural areas and are dependent on agriculture for their living, (Central Intelligence Agency (CIA), 2013). According to Mgbenka and

Mba (2016), Nigeria government and some foreign bodies have made deliberate efforts to improve Nigeria's agricultural production but these efforts have not yielded expected results. Though Enete and Amusa (2010) noted that government and the private sector, which should drive the sector through consistent policies, robust funding and infrastructural development, have failed to accord this problem the priority it deserves.

Abogan, Akinola and Baruwa (2014) posited that Nigeria's agriculture is proliferated with very small farms, the use of unsophisticated and old-fashioned farming methods, poor access to credit services, poor manufacturing technology, and deficient inputs for farmers, due to shortfall in the availability of production factors. These Okunmadewa (2002), Alayande and Alayande (2004), Spencer (2002), Poulton, Dorward and Kydd (2005) and Apata (2006) noted is as a result of their socio-economic factors which have deterred them from accessing agricultural information. Access to agricultural information is needed by smallholder farmers to help them mobilise and fashion the way they make decision required for farming. Mgbenka, Mbah and Ezeano (2015) stated that information is an essential ingredient in development programmes but Nigerian farmers seldom feel the impact of agricultural information either because they have no access to such vital information or because it is poorly disseminated. Ballantyne (2009) noted that access to agricultural information is needed in addition to different knowledge from different people across the full spectrum of producers, scientists, educators, advisors and policy makers. The author stated that the developing world needs reliable information and knowledge on agricultural issues.

Growth in agricultural sector is information dependent. According to Ayanyemi (2006), information is an essential resource for individual growth and survival. Tadesse (2008) opined that various sets of information and messages are relevant to agricultural activities of farmers such as crop production and protection, animal production and management, and natural resource production and conservation. Contextually, agricultural information revolves around agricultural related activities such as agro-forestry, crop production/protection, livestock production/management, pest and disease control, fertilizer availability and application, agricultural credit facilities, market prices, improved varieties, weather condition and competitors among others. The complex nature of agricultural environment requires broad based agricultural information that evolves from many scientific findings for improvement in the sector. Smallholder farmers with low socio-economic characteristics are required to access this multifaceted agricultural information from high-tech tools, research and development among others. The socio-economic characteristics include age, education, farming experience, size of land holding among others and according to Hassan, Siddiqui and Irshad (2002) and Hassan (2008), socio-economic factors exert their pressure on the attitude and behaviour of an individual. Overcoming the problem of access to agricultural information by this group of farmers has remained a challenge in the rural areas where communities are often small, widely dispersed across vast areas, and above all very poor socio-economic characteristics.

The onus lies on information service providers such as rural public libraries and their librarians to help access timely, accurate, pertinent, and reliable information to this group of users. It is pertinent to note that new information on agricultural practices is deposited in such libraries as frequently as they occur. IFLA/UNESCO (1995) averred that public library is the local gateway to knowledge, providing a basic condition for lifelong, independent, decision-making and cultural development of the individual and social groups. It is an organisation established, supported and funded by the community, either through local, regional, or national government or through some other form of community organisation (IFLA, 2001). IFLA further stated that a public library provides access to knowledge, information, and works of the imagination through a range of services and is equally available to all members of the community regardless of race, nationality, age, gender, religion, language, physical and mental limitations, economics and employment status and educational attainment. Kibat (1990) stated that there is a growing recognition that library services, particularly public libraries, are an integral part of national socio-economic development and improvement of the general quality life.

Notwithstanding, access to these essential services is most often not satisfactory in developing

countries, especially in the rural area where smallholder farmers reside. Be that as it may, Alemna (2006) stated that public libraries are components of public-sector organisations and have information systems that are intended to contribute to the socio-economic and cultural development of individuals in the society. Bell (1979) noted that developing countries' dependent on information to create innovation and change, places a high premium on their ability to access and use information to create advances in the society. Public libraries and their librarians will be failing in their duty if smallholder farmers do not have access to agricultural information and should, therefore, be challenged to bridge the gap on agricultural information access no matter the socio-economic characteristics of the smallholder farmers.

Following the low agricultural production in Nigeria and given that the expected role of public library especially in rural areas is not being felt it was deemed necessary to sedulously undertake this study. The objectives of this study are to: present the socio-economic characteristics of the smallholder farmers; determine the relationship between the socio-economic characteristics of the smallholder farmers and their access to agricultural information and determine smallholder farmers' rating of library services provided by the public libraries in Southeast Nigeria.

Review of Related Empirical Studies

Effect of Socio-economic Characteristics on Access to Agricultural Information

Socio-economic characteristics to a large extent either propel or hinder smallholder farmers' access to agricultural information for increase in their agricultural production. Omoregbee, Awhareno and Ekpebu (2013) carried out a study to analyse cassava farmers' socio–economic characteristics and their access to agricultural information in Delta State, Nigeria. Multi-stage sampling technique was used to select 146 cassava farmers. Data was collected through structured questionnaire and analyzed using frequency counts, percentages and logit regression analysis. Findings revealed that the Ministry of Agriculture, friends and neighbours, radio and television were major sources of information to respondents. It was equally revealed that majority of the cassava farmers access information on available market for produce, produce price, input

price, improved cassava varieties, fertilizer type and fertilizer application. Inferential statistics revealed that education, membership of association and extension contact had a significant influence on respondents' access to agricultural information and the Omnibus test on socioeconomic characteristics of the respondents and their extent of access is significant at 5% (P < 0.05). The authors concluded that accessibility of cassava farmers to agricultural information in Delta State is generally low.

Likewise, Koskei, Langat, Koskei and Oyugi (2013) carried out study on determinants of agricultural information access by smallholder tea farmers in Bureti District, Kenya. A combination of multistage, purposive and proportionate random sampling was used to select 170 respondents. Data collected was analysed using Statistical Package for Social Sciences (SPSS) version 15 and Probit Model was used to estimate the parameters that determined access to information. The findings revealed that off-farm income, education level, household size, marital status and time spent at tea buying centre significantly influenced access to information by small holder tea farmers. In conclusion it was emphasised that there is the need for the smallholder tea farmers to access information so as to facilitate increase in yield.

In the bid to examine the determinants of credit access by rural farmers in Oyo state, Ololade and Olagunji (2013) identified the socio-economic characteristics of the rural farmers, examined the factors affecting access to credit by the rural farmers, identified constraints faced by rural farmers in credit acquisition. Data was collected with the aid of structured questionnaires, administered on 210 respondents using multistage sampling procedure. The analysis was carried out using descriptive statistics and logit model. The findings revealed that significant relationships existed between sex, marital status, lack of guarantor, high interest rate and access to credit. It was concluded that there is need for financial institutions to help look into the conditions for obtaining credit by farmers, so that the less privilege among them will be able to benefit from credit disbursement especially in the aspect of high interest rate, guarantor and collateral security.

In their study to investigate the effect of farmers' socioeconomic characteristics on access to agricultural information in Pakistan, Rehman, Muhammad, Ashraf, Mahmood, Ruby and Bibi (2013) identified various agricultural information sources of farmers, their access to agricultural

information and its association with the socio-economic characteristics. A proportion of 361 respondents was proportionately sampled from the population of 5850 subscribers of three selected agricultural magazines. The data was collected using questionnaire and analysed. Bivariate analysis was used to test the level of association between the selected variables. The results showed that the print media and fellow farmers were the major information sources of farmers and education and size of land holding had high significant positive relationship with access to agricultural information while age and farming experience had non-significant relationship. The author concluded that there is a dire need for the effective implementation of policies on adequate and easy accessibility of agricultural information to the farmers to enhance the agricultural production.

Jeiyol, Akpan and Tee (2013) examined various issues related to access to credit by both male and female crop farmers in Benue State, Nigeria. Structured questionnaire was used to collect data from sixty male and sixty female crop farmers randomly sampled from eight Local Government Areas of zone A of the Agricultural development project (ADP) of Benue State. The findings revealed that the presence of ageing farming population; low formal education among farmers and importance of remittance to agricultural production in the region. The study also identified rotating credit and local savings as the major sources of credit to both male and female farmers in the region. The estimated Logit model revealed that farmers' household expenditure, cost of fertilizer, cost of hired labour, farm size and farm income are significant determinants of access to credit among male and female farmers in the study area. It was concluded that the study has identified several farm level policy variables that will be useful to formulate farm-based policies that can promote credit access and solve other credit issues faced by female and male farmers in Zone A of the ADP in Benue State, Nigeria.

Nyamba, Malongo and Mlozi (2012) investigated factors influencing the use of mobile phones in communicating agricultural information in Rural Tanzania. A multistage sampling method was used to arrive at 384 respondents and 16 key informants. Data collection was carried out using interview schedules, checklist for key informants and focus group discussions. Data collected was analyzed using a Statistical Package for Social Science (SPSS). The findings revealed that the asymmetry information generates uncertainties in farming business which eventually limit the economic potential of farmers as market participants. Based on the observed penetration rate the author stated that it seemed that basically, the study results, can be interpreted that, mobile phone technology acceptance to rural Tanzania was high enough for one to accompany it with a predictable positive economic impact. It was further revealed that people in the study area capture the advantages of increased number of mobile phone to access information related to their farming business. Factors that influenced mobile phone use in communicating agricultural information included mobile phone ownership, type of agricultural information to be communicated, farming system practiced, network coverage, and respondents' socio-economic characteristics. It was concluded that asymmetry information limits the economic potential of farmers as market participants.

Jain, Ahuja and Kumar (2012) carried out a study to examine the extent of farm women's access to ICTs, the use of ICTs by farm women, the determinants of farm women's access to ICTs and to explore the impact of ICTs on farm productivity and women's empowerment. The findings of the study showed that the farm women's access to ICTs and their usage in the study area was observed to be less. However, it was equally found that access to ICTs has been found to improve the income of the farm women households and increase their participation in the decision-making. The study concluded that access of ICT to farm women is largely determined by the socio-economic status and educational status of the household.

Nouman, Siddiqi, Asim and Hussain (2013) carried out a study aimed at investigating the impact of socio-economic characteristics of farmers on access to agricultural credit in Pakistan. Data was collected using structured questionnaire from a sample of 80 beneficiaries of formal agricultural credit from the district Swabi of Khyber Pahktunkhwa province. Findings suggest that the amount of agricultural credit that can be borrowed by the farmers is significantly affected by their marital status, farm status, farm size, and education level. It was concluded that the findings of the study suggest that a strong relationship exists between the access to agricultural credit and the socio-economic characteristics of the borrowers.

Kughur, Ortindi and Katikpo (2015) carried out

a study to investigate factors affecting farmers' accessibility to agricultural information in Gwer-East local government area of Benue State, Nigeria. Data for the study was collected through the use of structured questionnaire administered on 116 respondents selected randomly from four out of ten council wards that make up the study area. The result of multiple regression analysis on socio-economic characteristics indicates that formal education and annual income were significant. In summary, some of the articles reviewed revealed that access to agricultural information and credit facilities were low and that significant relationship exist between socio-economic characteristics of the farmers and access to agricultural information and in some cases access to credit.

Public Library Services

The rating of information or information services by the users is an appropriate way to examine the extent to which libraries have contributed to effective information services delivery to her users. Kayaoglu (2014) carried a study on perceptions and expectations of public library users in Istanbul, Turkey. This study adopted a survey method and data collected tools were through the questionnaire methods a total of the 643 respondents randomly selected from 15 public libraries in the metropolitan area of Istanbul. The findings showed that the Internet was the main source of information, and that the respondents do not use public libraries because of lack of time, convenience of the internet, not living close to a public library, and also being unaware of library services.

Namugera (2014) studied Users' awareness, perceptions and usage of Makerere library services in the main and selected branch libraries. The findings showed that the public library users lack knowledge of the services their public libraries provide and this is growing concern in public librarianship. This has been caused by poor communication and inadequate interaction between users and the public library, coupled with the library's failure to apply marketing strategies to promote the services they render to the public.

In a study titled user perception of library services and information resources in Kenyan Public libraries, Nzivo (2012) tried to provide information on how public libraries and information services in Kenya National Library Service (KNLS) are perceived, by examining adult users, with a view of improving service delivery and enhancing the effective management of public library services. The findings indicate that greater percentage agreed that the libraries have very conducive reading environments. Nevertheless, there was evidence in abundance from most respondents who completed the survey to suggest that KNLS libraries were well perceived in many dimensions. Users continue to use services and information resources regardless of their condition. A large percentage of respondents indicated that information resources from KNLS libraries equip them with appropriate knowledge to manage their professional information needs. This was a breakthrough in the findings according to the author that services and information resources invested overtime have emphatically impacted in improving users' career and information needs.

Posey (2009) studied Users' Perceptions of Library Service Quality: A LibQUAL Qualitative Study. The student perceptions were to discover the library services accessible at Walters State Community College. A total was of 666 respondents of Walters State Community College, shows the students perception of least level of services, and preferred levels of service.

In addition, Aslam and Sonker(2018) tried to discover the public library users' perceptions and expectations in Lucknow, India. The findings among other things revealed that the services are good, staffs are cooperative and computer and internet facilities were very poor.

An exploratory study conducted by Chang and Hseih (1996) on the perception of library service quality which focus on key clienteles that included staff and students from twenty-one universities in Taiwan indicate that competence, moderation, convenience, tangibles, communications and sufficiency of staff were key determinants in the level of service quality in the libraries.

The findings on a study conducted by Iwhiwhu and Okorodudu (2012) on user satisfaction with public library information resources, facilities, and services at the Edo State Central Library, Benin-City, Nigeria revealed that library users were not satisfied with information resources and services of the Edo state central library. This was as result of the poor state of information resources and insufficient services rendered by the library staff coupled with their poor attitude to work.

Kaunda (2013) assessed service expectation and perception of public library users: towards

development of user needs and user satisfaction measurement instruments for the national library service of Malawi. The findings showed that the services and facilities act as indicators of library usefulness to the sampled users are not clear in the literature. This paper gives suggestions on the effective use of the developed instruments. The paper points out that the user needs assessment and user satisfaction measurement of the National Library Service and improving the relationship between the National Library Service and its users.

Majid, Anwar and Eisenschitz (2001) employed a questionnaire in their study which sought to investigate all the possible factors that contribute greatly to library performances. The results revealed that collections, equipment and physical facilities were considered the most significant issues.

Ranganathan (2012) studied perception and expectation of the users of Bharathidasan university library: A study. The users found the library ambience homely and tidy. In this library location the quality of the book collection is very good. Google is the most preferred search engine of users of the Bharathidasan University library for literate search.

Materials and Methods

Description of the Study Area

This study was conducted in South East area of Nigeria. The area consists of Abia, Anambra, Ebonyi, Enugu and Imo states which covered a total land area of 76,358km^2 and were located on the east of the lower Niger and south of the Benue valley. The ecological area of the zone is diverse with tropical forest and savannah predominating. The annual rainfall has a bimodal pattern, with two cropping (planting and growing) seasons which last from April to October or early November. The dry season starts from late October or early November to early April. The indigenous people of the Southeast Nigeria are predominantly Igbo speaking and many of them are involved in agriculture with two major farming activities, crop, and livestock production. The crops cultivated include rice, cassava, yam, maize, cocoyam, plantain, cashew, oil palm, citrus, and mango, among others. Oil palm has historically been an important cash crop in the study area. The major livestock production in the area includes pigs, goats, sheep, and local cattle (African dwarf species).

Population, Sample/Sampling Procedure

The population consists of 121,953 registered contact smallholder farmers in Southeast Nigeria and the study adopted a descriptive survey design. Registered contact Smallholder farmers from the five states in the southeast region stood as follows: Anambra-25,404, Enugu- 18,489, Imo- 22, 880, Ebonyi- 31,487 and Abia- 23, 693 (Agricultural Development Programme (ADP), 2016). The number of agricultural zones in Southeast Nigeria by states is: Enugu- six, Anambra- seven, Imo- three, Abia- three and Ebonyi- three. The multi-stage sampling technique involving simple random sampling in each stage was used to draw a portion of the population in this study. In stage one, two agricultural zones were selected from five states that make up Southeast Nigeria. Stage two involved the random selection of one local government from each zone followed by the selection of two agricultural farm communities. The third and final stage was the simple random selection of the study's respondents. The list of all registered farmers in the selected farm communities was used for the sampling frame and random number table was adopted in selecting the respondents. For this, all the states were assigned 71 respondents leading to a total sample of 355.

Methodology

The instrument for data collection was structured interview schedule. This was administered to respondents who can read and understand English and handled as an interview schedule or non-self-administered questionnaire in situations where the farmers could not read or write English (Opara, 2008). Three enumerators were employed in each state on the basis of their experience in data collection especially as regards to rural farmers and knowledge of the area. Replacement sampling was adopted to ensure that 71 responses were sampled from each state making it three hundred and fifty-five smallholder farmers. The schedule was divided into three sections. Section one was on the socio-economic characteristics of smallholder farmers in the study area while section two is on access to information. Section three is on the rating of services provided by the public libraries. The multiple linear regression method was adopted with the dependent variable as frequency of access to information and some of the socio-economic characteristics as predictor variables. The ratings of the services by

public libraries to smallholder farmers in respect of agricultural information are in four-point Likert scale. They were scored as 4- very good, 3- good, 2- poor and 1- very poor. Thereafter, the mean scores were calculated and ranked in descending order for magnitude.

Data Analysis and Findings

The data collected were analysed using a statistical Package and the frequency of responses, its percentages and the corresponding bar charts were obtained. A regression analysis was conducted in order to test for the significant effect of socio-economic characteristics of smallholder farmers on the frequency of access to agricultural information. The research considered eight predictor variables which include: age, gender, membership of farming association, average annual income, type of farming, size of farm land, educational level and years of experience.

Table 1 shows some socio-economic characteristics of smallholder farmers. The percentage of male respondents is 40.4 while that of females is 59.6. This shows that we have more female smallholder farmers in the study area than males.

Table 1: Some Socio-economic characteristics of smallholder farmers

SOCIO-ECONOMIC CHARACTERISTICS	Category	Frequencies	Percentages
GENDER	FEMALE	220	59.6
	MALE	149	40.4
AGE	32.00	19	5.1
	39.00	42	11.4
	46.00	31	8.4
	48.00	123	33.3
	53.00	110	29.8
	56.00	24	6.5
	67.00	20	5.4
EDUCATIONAL LEVEL	NONE	110	29.8
	PRIMARY	129	35.0
	SECONDARY	111	30.1
	TERTIARY	19	5.1
FARMING EXPERIENCE (YEARS)	5-9	67	18.2
	10-14	81	22.0
	15-19	221	59.9
TYPE OF FARMING	CROP	19	5.1
	MIXED	350	94.9
SIZE OF FARMLAND (PLOTS)	0-2	129	35.0
	2-4	204	55.3
	4-6	19	5.1
	6-8	17	4.6
AVERAGE ANNUAL INCOME (NAIRA)	50500.00	38	10.3
	70500.00	92	24.9
	125000.00	111	30.1
	200000.00	110	29.8
	250000.00	18	4.9
MEMBERSHIP OF FARMER ASSOCIATION	NO	350	94.9
	YES	19	5.1

The age distribution of smallholder farmers shows the highest numbers to be within the age of 48 with 33.3%, while the lowest is within the age of 32 with 5.1%. The percentage distribution of educational level shows in descending order, primary 35%, secondary 30%, none 29.8% and tertiary 5.1%. On years of experience, the percentage distribution is 5-9 years with 18.2%, 10-14years is 22% and 15-19years is 59.9%. Types of farming have mixed farming with 94.9% and crop farming with 5.1%.Size of farm land has 0-2 plots (35%), 2-4plots(55.3%), 4-6 plots(5.1%), .6-8 plots (4.6). The percentage annual income of ₦125, 000 is the highest with 30.1% while membership of farming association has the response 'yes' with 94. 9%.

Table 2 shows the result of the regression analysis for prediction of frequency of access by some socio-economic characteristics of smallholder farmers.

Table 2: The Result of the Multiple Regressions with Significant Characteristics

Model	Unst. Coef.		T	Sig.	95% Conf. Interval for B	
	B	Std. Err.			Low. Bound	Upp. Bound
(Constant)	18.561	0.768	24.161	0.000**	17.051	20.072
Gender	2.643	0.389	6.791	0.000**	1.877	3.408
Age	2.129	0.173	12.306	0.000**	1.789	2.469
Educational level	2.002	0.103	8.006	0.000**	1.009	2.006
Farming Experience	0.011	0.001	7.504	0.000**	0.008	0.014
Mem. of farmer Group	0.143	0.030	4.723	0.000**	0.084	0.203
Size of farmland	0.326	0.083	3.927	0.000**	0.163	0.489
Avg. annual income	8.431E-006	0.000	4.237	0.000**	0.000	0.000
Type of farming	-0.569	0.233	-2.446	0.015*	-1.027	-0.112

R= 0.936; R^2 = 0.877; Adjusted R^2 = 0.872; ** Significant at $p < 0.01$; * significant at $p < 0.05$.

The characteristics with P d" 0.05 indicate significant contribution to the frequency of access to agricultural information. They are: age, farmer experience, average annual income, membership of farmer group, type of farming, gender, size of farm land and educational level. The coefficient of multiple determination (R squared) of 87.7% indicate the percentage of response variable that is explained by the predictor variables.

Table 3: Mean Rating of the Services Provided by Public Libraries

Library Services	N	Mean	Std. deviation	Remark
Selective Dissemination of Information	355	1.60	1.01	Poor
Reference/Inquires Services	355	1.58	0.49	Poor
Current Awareness Services	355	1.54	0.95	Poor
Photocopy Services	355	1.52	0.67	Poor
Document Delivery Services	355	1.44	0.60	Poor
Internet Services	355	1.18	0.38	Very poor
Translation Services	355	1.09	0.89	Very poor
Overall Mean		1.42		Poor

Table 3 shows the result of the responses on the rating of public library services which are classified as very poor, poor, good and very good. The survey result shows the lowest mean rating of 1.09 which corresponds to translation services and the highest mean rating of 1.60 corresponding to selective dissemination of information. The public library services have an overall mean rating of 1.42. This shows that the services rendered by public library in Southeast Nigeria are poor. The standard deviation ranges from 0.49 to 1.01.

Discussions

The result of the multiple regression analysis indicates the socio-economic characteristics that contribute significantly (P < 0.05) to the prediction of frequency of access to agricultural information. Age, gender, educational level, farmers experience, membership of farmer association, size of farmland and average annual income contribute positively, while the type of farming contributes negatively. The implication therefore is that the significant socio-economic characteristics are good predictors of the frequency of access to agricultural information. However, the positive coefficients increase the predictive ability of frequency of access while the negative coefficients decrease its predictive ability. This is in accordance with Awhareno and Ekpebu (2013), Koske et al. (2013), Ololade and Olagunji (2013) Lawal (2017) and others who found that socioeconomic characteristics of farmers affect their access to agricultural information and other production resources. The socio-economic characteristics of farmers affect the way they access agricultural information. It can be either positive or negative. The work of Omoregbee et al. (2013) showed that the Omnibus test on socioeconomic characteristics of the respondents and their extent of access to information is significant at 5% (P < 0.05). They maintained that the regression model containing the various independent variables is better in explaining farmers' access to agricultural information than the model without the variables.

Equally too, this is in agreement with the findings of Rehman et al. (2013) which revealed that education and size of land holding had a highly significant positive relationship with frequency of access to agricultural information while age and farming experience had non-significant relationship. The rating of public library services in Southeast Nigeria was very poor. This is in accordance with Kayaoðlu (2014) who found that the services that were perceived as "poor" by the participants coincided with the services that could attract the users to the library. Furthermore, Namugera (2014) found that the public library users lack knowledge of the services provided by public libraries. The author revealed that, this was caused by poor communication and inadequate interaction between users and the public library staff, coupled with the library's failure to apply marketing strategies to promote the services they render to the public.

Library services such as reference/inquiry services, internet service among others can as well attract smallholder farmers to the library. It was also found that library service was poor in a study carried out by Iwhiwhu and Okorodudu (2012). The findings of this study are contrary to Aslam and Sonker (2018) who found that the services are good, staffs were cooperative and computer and internet facilities were very poor in Locknow, India.

Conclusion

In conclusion, public libraries can play significant role as a component of public-sector organisations in dissemination of agricultural information. This can ameliorate the effect of socio-economic characteristics of the smallholder farmers on frequency of access to agricultural information for agricultural production. They are the institution within the reach of the smallholder farmers and supposed to be an integral part of their daily activities. The librarians working in the public library should not stay in their comfort zone but should repackage information resources to these farmers. Equally, too, they should organise symposium to discuss about new research findings as they arrive in the library. There is equally the need to organize informal forum in the public library for discussion in order to improve their literacy level. Considering that the smallholder farmers rated the service of public library poor shows that public library staff have to wake up to their responsibility. It is through rating public library services that their roles can be examined.

The results equally have implication on the part of the government. They should not pay lip service

to structural transformation of socio-economic development of rural areas in Nigeria. There is the need for government to improve the attributes of these smallholder farmers in order for them to have potentials to access agricultural information.

Having determined the significant socio-economic characteristics of smallholder farmers that affect frequency of access to agricultural information in public libraries and the rating of the services provided by public libraries on access to information, it is expected that the findings of this study will make it easy for governments, and policy makers to initiate appropriate policies that can augment the contributions of public libraries to access agricultural information by smallholder farmers. Government at Federal, State and local government levels should look into the established public libraries with a view to making them acquire the necessary facilities and resources on agricultural information, since this could be the reason why they do not serve the smallholder farmers well. Librarians should ensure that they acquire all the new information relating to agriculture and also make it accessible to smallholder farmers. All stakeholders should ensure that only qualified librarians are employed to serve in the public libraries. Finally, effort should be directed towards improving some of the smallholder farmers' socio-economic characteristics such as education, membership of farmer association among others.

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Academic Librarians' Activities in Creating Social-Media Authority in Three Selected Nigerian University Libraries

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Abstract

The proliferation of mass data on the internet is currently witnessing spoof of different websites and fake content in some of the social media platforms. This development prompted academic libraries/librarians not to trust completely, some of the information (contents) in the social media arena. In order to avoid errors, rumours, and misinformation which can easily spread through social media channels, librarians as information professionals become duty-bound to check the validity and reliability of the contents so as to maintain trust, credibility, and authority in the social media units of the libraries. Therefore, this study is set (a) to investigate how academic libraries/librarians create users' trust, build a reputation and maintain social authority; and,(b) to explore the constraints of academic libraries/librarians in maintaining social media authority in Nigerian academic libraries. It is a qualitative research approach, using Rogers's 2010 Diffusion of Innovation theory, based on the Innovation Decision Process. The results indicated that academic libraries/librarians have been in the vanguard of establishing credible content on their social media platforms. Libraries and librarians are shifting focus from the traditional method of checking the authority and validity of information (content) to a new way of assessing the authority of content in academic libraries. Also, it was found that academic librarians' behavioral attitudes towards social media content such as inappropriate content, lack of teamwork, lack of management support, and lack of social media policies, among other issues are impediments to the flow of establishing credible social media authority in the academic libraries. Notwithstanding, the researchers offer suggestions for social media libraries/librarians to brace up and work-hand-glove to strategize and know more about the contents the customers may have passion therein, in order to earn trust, maintain online reputation and gain social authority in the academic libraries.

Keywords: Social Media; Web 2.0; Authority; Nigerian University Libraries

Introduction

In recent years, the unprecedented proliferation of mass data and information on the Internet, made academic libraries to adjust, not to trust completely, information and or contents that are found on the Internet unless tested and proved valid and accurate. This development on the Internet has necessitated academic libraries and librarians, to put forth as a duty to sift outright content and discard information that is inappropriate within the context of social media in the academic libraries (Bradley, 2015). Such a step is to fulfil the goal of social media and its marketing activities in the library which is aimed to drive people from the unknown to their perfect and clean sites for educational, informational, and

recreational and entertainment platforms. Ultimately, in the library context, the activities on social media platforms, aim not for profit, rather, it is to gain customers' trust, earn service reputation and authority (Bradley, 2015; Vlieghe, Muls, and Rutten, 2016). According to Bradley (2015) Social Media Authority (SMA) in the library context, refers to the library users looking up to the librarian as an expert in both the content and services. Against this backdrop, librarians whose responsibilities are known, among others, to be the organisers, interpreters, and providers of information, have considered it a duty to create a strategy to sift out accurate content and discard information that is inappropriate or wrong within the context of social media in the academic libraries (Bradley, 2015).

Consequent to the breakthrough of the innovation on the use of social media applications worldwide, academic libraries in Nigeria are faced with new challenges. Such challenges are the control of information resources in physical and virtual domains, meeting the rapidly changing information needs and expectations of the 21st-century users, making themselves more relevant in trends of the digital age, attracting users to the library, and maintaining trust and reputation in terms of social media contents in order to retain customers in the library (Akporhonor and Olise, 2015; Iwhiwhu, Ruteyan, and Eghwubare, 2010). Hence, the need for the academic librarians to reconsolidate, reshape, re-design, re-package their resources, and re-strategise their services as a means of retaining trust, reputation, and authority in the academic library environments. Therefore, this research is set to focus on the understanding of how academic libraries/ librarians' strategies in establishing social media authority through building users' trust and online reputation in Nigerian university libraries.

Literature Review

Presently, society cannot control the flow of news or even messages anymore (Luoma-aho and Vos, 2010). Individuals, organisations, and corporate bodies have to compete against other sources for them to be heard and trusted. Veil, Buehner, and Palenchar (2011) assert that the news of a crisis today can be shared and re-shared, reaching millions of people without the intervening presence of a journalist. This has led to information on social media in the 21st Century going viral without being controlled. Librarians make use of social media to connect with their users easily (O'Dell, 2010). They use the platforms to promote their library services and events (Charnigo and Barnett-Ellis, 2007). Important information sources in some libraries are connected to users through social media platforms (Milstein, 2009). Literature has shown that in some institutions, Facebook is used to engage users when they want to register in the academic libraries.

Accordingly, it has been used to facilitate professional relationships within and beyond the libraries (Graham, Faix, and Hartman, 2009). Social media provide the platform for academic libraries to establish authority in their respective libraries based on the available resources and services (Bradley, 2015). Despite the increasing use of social media by academic librarians, still, the attitudes of librarians in checking the validity and authority of the social media content in the library have been very low. The overall assumption of Digital Object Identifier (DOI) research centres on the circumstances which increase or decrease the likelihood that a new idea, product, or practice will be adopted by members of a given culture. Rogers (l995) identified: knowledge, persuasion, decision, implementation, and confirmation as the five steps of the decision-making process. It is against this backdrop that Mahler and Rogers (1999) who theorises that there are three important factors in the decision-making process which they classified as: a) those who make the decision: b) whether the decision is made freely; and c) voluntary implementation. In line with this, Roger postulated three types of innovation-decision that can be adopted to gain authority or acceptance from customers. Thus: *Optional innovation-decision* - this refers to a decision that is made by an individual who is to some extent, distinguished from others in a community; *Collective-Innovation decision* - this refers to a decision that is made collectively by all individuals of a community. *Authority innovation-decision* – this is a decision enforced upon by a supreme body or someone higher in the hierarchy of authority (Rogers, 2010). This research examines the study based on social media content; building trust and reputation through social media; social media engagement and social media status updates/feedback. The four concepts

discussed below are the key factors that build the minds of users, which leads to building the trust of the contents and prompted user's engagements and thereabouts lead to user's comments and feedback. Hence, the need to understand.

Social Media Content

Contents determine the success of any social media platform (Smith,I2013). Bradley (2015) affirms that content can simply be judged and validated on the basis of the reputation of the publisher, editors, or the compilers of the information in the academic libraries. He noted that, in the past, the authoritativeness of information depends largely upon the method of compilation, scope, treatment, arrangement, and items of the information, such as the full name of the author, birth, academic and professional qualifications, position held and publications contributions; indexes and cross-references; updating and revisions. Specifically, the format such as the clarity, uniqueness, and the reliability of the information (Bradley, 2015). However, the advent of the Internet has created a different set of problems in terms of accuracy and validation of social media content in academic libraries. Kalyanaraman and Sundar (2006), confirm that web portals that personalise content, tend to generate more positive user attitudes. Today, libraries can only be successful in social media activities, if the content illustrates what is relevant to the customers.

Building Trust and Reputation in Social Media

Presently, some social media users are faced with difficulty understanding what content is genuine on social media platforms. Bradley (2015) expressed that, during the print era, it was simple to trace who was the publisher, their reputation, the authors and what they had previously published, and so forth. He further demonstrated that an individual can locate information about an organisation through his favourite search engine by just typing the name of the establishment and clicking the website. However, today, even if that can happen, one must think of exactly what he wants to do with what sort of information. Bradley (2015) stated that Facebook does not monitor pages or posts for accuracy, nor is

YouTube that can used to upload 100 pieces of video content every minute. This development in the social media arena makes it hard for every content on the platform to be trusted. According to Reich, Bentman, and Jackman (2008), in order to avoid conflict and crisis, it is critical to know how people process the information they receive and also the organization that disseminates it. This helps to standardise the logic and the platform to which such information is meant for accordingly, which eventually builds trust and reputation on the organisation or the academic libraries. Maxwell (2016) advised that one useful way to build trusted and reputable content is by finding and sharing quality content that can invariably affirm the authority of the expertise. Thus, if the users understand the firm authority in a given platform, they will always be attracted to its website. According to Armstrong (2015), if an individual or an organisation does not gain authority in social media, such body will likely to perform less and less social media marketing. Hence, it is the pride of academic libraries to focus on trust, reputation, and authority in both contents and services.

Social Media Engagement with Customers

Social media has been used in various ways to engage and capture the attention of users through quality content. How academic libraries engage with users at different levels to fulfill their customers' needs which aim at building trust, reputation and authority were described by Zohoorian-Fooladi and Abrizah (2014), in a form of a honeycomb framework of seven social media building blocks: *Presence, Synchronicity, Information Needs, Groups, Conversation, Relationship, and Current Awareness.* This is evident that librarians make use of social media platforms based on this framework to establish mutual communication, facilitate interaction and establish users' trust, online reputation, and social authority despite its challenges. Siddike and Kiran (2015) point out that, academic libraries in Malaysia use Electronic-Word-of-Mouth (eWOM) to raise awareness and build a relationship with the users' communities through social networking sites. Harinarayana and Raju (2010) found that some university libraries have been using social networking sites to make available photos of library events aimed at fostering collaboration and participation which are

the most attractive features of Web 2.0. In an effort of gaining reputation and authority on social media in the academic libraries, (Boateng and Liu, 2014) found that academic libraries in the US had to develop strategies for making the best use of social media. Furthermore, Wordofa (2014) comments that media sharing sites are used by academic libraries to engage users through the provision of library instructions and tutorials as well as sharing a wide variety of topics. These activities are attractive and are the potential for building trust, reputation, and authority on the social media content in academic libraries. To compel customers to accept and believe in the social media contents, the academic librarians have to take a level of responsibility in establishing the facts and validity of the information.

Social Media Status Updates/Feedback

Academic libraries are recognised to have social media authority by regularly participating in online conversations and contributing valuable information in an honest and genuine approach. Research has shown that the best way to reach and attract regular users of social media is through the constant updates of the social media status (Connell, 2009). News linked to library's activities and events, sharing videos and photos, greetings to users that are posted by library Facebook page administrators are known as status updates (Ayu and Abrizah, 2011). In terms of authority, Ayu and Abrizah (2011)maintain that libraries that posted content daily are to have more "followers" and "likes" compared to libraries that updated the status only once a month. Abdullah, Chu, Rajagopal, Tung, and Kwong-Man (2015) reported that social media platforms offered some interactive tools for a two-way communication which facilitate gathering users' feedback. Identifying the importance of updates and feedback which equally form part of reputation and authority, Boateng and Liu (2014) reveal that 97% of the top US academic libraries were using RSS (Really Simple Syndication) to communicate university news, events, and resource updates, while Chat/IM was used to provide real-time connections with users. They further noted that the libraries use various platforms to mediate the delivery of IM-based services.

Dickson and Holley (2010) comment that librarians can post news about the library and events

happening in the library and expect feedback from users. Similarly, Ezeani and Igwesi (2012) admit that librarians periodically post messages, share information on a particular subject or issues both in the institutions and government and allow users to comment or contribute to the content. Akporhonor and Olise (2015) contend that social media has become a dependable platform for the dissemination of information, a forum for feedback mechanism, research, and as well for promotion. They further acknowledge that social media like Facebook, Twitter, Flickr, YouTube, Wiki, etc., are useful for the promotion of library resources and services and for the speedy collection of feedback from library patrons. Such dynamic activities of social media are projecting effective services and also maintaining relationships with users through updates and users' feedback which invariably attracts trust, reputation, and authority in the academic libraries. Such activities encourage patrons and new fans to join the library. Hence, it is not out of place to note that social media is a catalyst in re-engineering a two-way communication for both the libraries and the patrons in terms of building trust, reputation, and authority.

Objectives of the Study

The focus of this research is to:

i. investigate how academic libraries and librarians establish their social media authority in regard to building users' trust and online reputation as information experts;

ii. explore the constraints of maintaining social media authority in the academic libraries.

The research is guided by the following questions:

i. How do academic libraries/librarians establish social media authority and maintain users' trust and reputation?

ii. What are the deterrents of maintaining social media authority in academic libraries?

Methodology

The design of this research is a qualitative research approach, the reason for the choice of this method is because qualitative research attempts to understand and make meaning of a phenomenon from the

participants' perspective, in which also the researcher can approach the phenomenon from an explanatory and critical stance(Merriam,2009) The researchers explore the academic librarians' innovation in line with Rogers (2010) postulation: *Optional, Collective and Authority* innovative decisions to understand their novelty as the social media units strive to gain authority in the academic library's setting.

The population of the study covers all the academic staff from the three federal university libraries in Nigeria. Viz: University of Jos, Ahmadu Bello University, Zaria, and the University of Abuja which are the oldest universities in the north-central zone in Nigeria. The total number of academic staff in the three universities staff was fifty-six (56). However, 15 staff consisting of university librarians and those directly related to the study constitute the sample. The participants in this research were classified into three different categories. Thus: (a) University Librarians (b) system librarians; librarian11; Assistant librarian and media librarians selected from each of the three universities used for the study. Participants have been in the services of the university libraries at different levels and stages. The five academic librarians in each of the universities have the knowledge and experience of ICT and especially Social Media application. They have served between five (5) and thirty (30) years of experience respectively. Each participant reported having served in various sections in different capacities including social media units of the libraries. Table 1, shows the demographic information of the participants. The semi-structured interview was used as an instrument for data collection because the participants are few in number. Thus the issue of the questionnaire is not necessary for this qualitative research.

Table 1: Participants' Profile

Participants	Positions held	Qualifications	Age
	University Library A		
Kuh	University Librarian	PhD	57
Ezau	System Librarian	MLIS	39
Zain	Assistant Librarian	BLIS	27
Jah	Librarian II	BLIS	36
Rem	Head of Media	MLIS	40
	University Library B		
Dita	University Librarian	PhD	53
Sah	Law Librarian	BLIS	37
Lim	System Librarian	BLIS	31
Dama	Librarian II	BLIS	34
Gere	Head of Media	MLIS	42
	University Library C		
Ran	University Librarian	PhD	56
Ganiyat	Institute of Agriculture Librarian	BLIS	39
Areba	System Librarian	BLIS	31
Bippa	Librarian I	MLIS	47
Shock	Head of Media	MLIS	51

Pseudonyms were used to protect the identity of the participants in the data analysis (Kite, 1999). The decision to use pseudonyms was made earlier in the research and it was based primarily on the philosophical principle of participation and collaboration between the researchers and the participants. .

The interview was conducted in the participants' workplaces (offices) for conveniency and privacy. Each interview with participants lasted between 40-45 minutes. The conversation was recorded using an audiotape for coding and reporting. A code of numbers was used to identified interview recordings and transcriptions to create room for confidentiality at the point of analysis. The transcription of the data was done logically by the researchers to ensure that ethical issues and the participants' confidentiality are maintained.

Results

Based on the qualitative research approach, the data analysis consists of two segments which are based on the research questions. The two research questions were modeled in order to realise the findings of the study.

Research Question 1. How do academic libraries/ librarians establish social media authority and maintain users' trust and reputation?

From the onset, this research aims to identify the determinants of academic libraries/librarians in creating social media authority which is purposely to expose the creditability of the libraries as an expert in information acquisition, organisation, dissemination, and services rendered in the academic environment. According to the participants, academic libraries in Nigeria have from time-to-time established Facebook, Twitter, and other platforms to have question and answer sessions with their customers. They firmly believed that social media content attracts followers and their importance as well, ensuring a strong way of coming up with social media authority for the academic libraries. The researchers' interaction with the participants on the occurrences of social media in academic libraries reveals academic libraries' frequent existence on social media platforms to gain trust, reputation, and authority. Mr. Jah, one of the participants informed

the researchers that: *"The social media unit of our library shares links with other similar libraries and we keep on observing the comments of our customers regularly."* This statement shows that the more academic libraries share links to other libraries, focus on the objective of the libraries in terms of content, and also engage the users on their platforms then, the greater the degree of social media authority in the university libraries. The University Librarian B and Zain (Assistant Librarian A) shared testimonies from users that are constantly engaged on the platforms. The excerpts: *"I notice that the library has been receiving recognition through customers' testimonies about our social media activities and services."* Dita. *"…we have just realized in our social media unit that the more people engaged on our Facebook and Twitter platforms, the more we command authority in our social media platforms."* Zain. Thus, the evidence of social media authority is attributed to sharing of links, comments, and frequent engagement of customers on the social media platforms in the academic libraries. The library created a platform in order to serve their users effectively and at the same time collect feedback of their services from users which invariably will enhance their performance, Users on the other hand engage on library platform to access information concerning their studies, new arrivals in terms of information resources, general news, and information concerning the library.

Building Users' Trust and Online Reputation:

Optional-Innovation Decision Process

This section aims to understand the influence of academic librarians' decision on striving to maintain users' trust and online reputation on social media platforms in the academic libraries based on Rogers's (2010) innovation-decision process. . Participants recount their familiarity and skills acquired over years of experience in their workplaces. They believed that such knowledge has resulted in their superior awareness of their customers' needs. The participants (Ran, University Librarian C; Shock, head of media A; Areba, System Librarian C and Gere, head of media B) admit to having been influenced by their knowledge of the environment. The excerpts:

Most of the contents posted on the platforms like my Twitter and Facebook pages were based on my past understanding of our users' needs and their expectation from us in the library …Ran.

… … my activities are derived from the experience I had with the social media platforms within and outside the library. … I thank God that my experience with some of the platforms helps me to serve the customers better … Ezau.

… yes … people often said "experience is the best teacher" … as an administrator of social media, I have worked for over 10 years now. Over the years, I have been able to search other databases to sort for myself what I feel is best for the library. ….Areba.

…As the head of the social media unit, I think so much about the library's credibility and what it stands for… and I have tried so much to maintain quality services in terms of contents posted on the social media platform … Gere.

The distinctive aspect of this innovation is that all decision is centred on the individual and he/she wears the crown or bear the risk whatsoever. The decision taken in building users' trust and online reputation at this level is faster and easier than collective decisions by the entire social media librarians. However, the individual at this stage may be influenced by anything around him/her. One basic and unique distinctive aspect is that he/she is the unit of his decision-making.

Collective-Innovation Decision Process

This study found that collective decision on social media content among professional librarians is an assurance way to achieve social authority, especially in the area of publicity and marketing library services. According to participants, users can tweet and retweet information, but that does not mean that it is genuine. Henceforth, they felt that social media content should be thoroughly checked collectively among social media librarians, to uphold the reliability and validity of the information (content) which invariably formed an authority. Thus:

Yah … social media require sincerity in every information that is found on the platform. So, before anything else, we have to jointly check our previous posts and dictate those feedbacks such as likes and or 'shares' and most importantly observed whether the post is actively utilized or not. ….Dama.

… we in the social media unit have to employ various means by repeating relevant posting of information content … … we evaluate the quality and the sources of information to achieve our end results of social authority in the library. … Lim.

Besides, the participants describe how they have to collectively go deeper to study the customers of the libraries. According to the participants, going by such a collective process they identified the individuals who share content on their platforms. This helps them to engage the users with social media content of their choices in order to earn users' trust, reputation and maintain social authority. The participants acknowledge that quality goes much further than quantity. So, their target is to maintain the minimum number of users who can trust their platforms. *"… we often undertake community analysis of the academic environment for the purpose to earn social authority.* Ezau.

The researcher probed further on what the participants do to win their customers' desires after studying their needs, and Ezau responded: *"… Well, on such assignment, we make effort to know the researchers and scholars' interest, and in turn, serve them in that manner, that has helped us to win their hearts."* He. Further added that: *"… in addition, we go down to the direct source of information either through in-depth search or otherwise to obtain evidence about the content which helps the library to establish the strength of the social media authority. "* Ezau.

The participants acknowledge that rumours and misinformation can easily spread through social media channels. Hence, according to them, all these strategies are to curtail problems in the social media unit of the library. As a result of the numerous contents floating on the Internet, the researchers' inquiries are to know how the participants can identify contents that are rich and trusted in order to gain

authority. Aran, the chief librarian C who was also an active participant, said: *"... to us, we source and substantiate contents that are educating, entertaining, enlightening and those that meet the objective of the library and which we feel that such contents add value (knowledge)to our customers before we can release for posting ..."* Ran.

Sah, (law librarian B), emphasises the library concern on users, that not every aspect of content is rich to display on the social media platforms. *"... one thing I know is that not everything we see that we publicize on the social media sites. We have to agree and justify the information... We do that to safeguard our users from being victims of rumors."* Sah. In this regard, it shows that not only those contents that are exciting on the social media librarians' part and are informative that are shared on the social media platforms for their customers but also such must be tested and agreed by the majority. Collective innovation-decision procedure passes through many stages as it involves many hands to make a decision on an issue related to content in the social media unit. Contents are created through collective agreement, and each librarian must participate in the process and all members must satisfy before the contents are finally posted on the social media platforms.

Authority Innovation-Decision Process

The participants affirmed that in the course of trying to establish authority in the social media unit, they had to connect with the major funding bodies of the libraries. According to participants, such strategy helps in a greater way to maintain communication and leverage the social media platforms which are also to the libraries' advantages. Shock, the head of media C, maintains that: *"... interaction with the parent body is necessary in order to maintain sanity and earn support and authority from users of our platforms.* Shock .Rem, head of media A, recounted the interference of the management as a strategy adopted to control social media content in the academic library with the mission to earn users' trust, reputation and social authority. *"... Must of the time social media contents are being verified and cautioned our activities by the university and the library management …* Rem.

Other participants (Bippa, Librarian I, C; Kuh, University Librarian, B; and Jah, Librarian II, A), acknowledge the involvement of the university/library management as they provide information and instruction on the types of social media contents for their libraries. The excerpts: *I receive a directive from the library management of every piece of information we are to relate to the customers of the library on our platforms.* Bippa.

shahh... dai... all information and contents that need to be addressed and share with the public, we were instructed that we should record them and forward them to the management for rectification... Kuh.

We mostly comply with the university's directives and always make sure that all things we do conform to the university and the library management decision... Jah.

Authoritative innovation process does not give room for the social media librarian to exercise his/ her choice of content freely. Contrary to optional and collective innovation, the authority decision making on contents are two separate entity. The university management occupies the highest authority in the decision-making process. Their position influences them to enforce the social media unit to conform to their decision in whatever way they feel. The social media unit of the library often suffers pressures to change or suspend social media contents based on the belief or the behavior of the management of the university.

Research Question 2: What are the Restraints of Social Media Authority in Academic Libraries?

There is evidence of frantic effort on the academic libraries and librarians in maintaining trust and authority in the social media unit of the academic libraries. The participants express the dimensions of their struggle to maintain followers on their platforms. However, the researcher investigates to know the difficulties the social media unit experience in terms of trust, reputation, and establishing social media authority in the academic libraries. Interviewees stated various reasons that depict barriers to successful social media authority in the academic libraries as presented in Table 2.

Table 2: Deterrents of Librarians in gaining social media authority

S/No.	Themes	Participants Statements
A	Behavioral' attitudes	"… severally, librarians turn the platform into personal usage…""… they use the platforms to engage their colleagues on unnecessary dialogue and confrontation…""… librarians' response to queries that they do not have the knowledge or ideas about…"
B	Annoyance	"… I often get angry with the kind rude and bad manners of comments from different members of staff in the social media unit…""… I become upset if there is no feedback on my posts … I feel rejected … and go off in utilizing the platforms.
C	Nervousness	"… I have stopped using our Facebook because of the incapable into the responses to me at the time I need an answer…""… some of us are very apprehensive towards ICT especially social media applications in the library."
D	Lack of teamwork	"… some individuals behind-the-scene are working against the adoption of social media…" "… even among the librarians at the top-level…""… I notice that librarians are not working as a team …" "… this has resulted in lack of organized content …"
E	Inappropriate content	"… I ironically, I have observed that social media in our library lack content. It is believed that social media triumphs on content. If there are no contents you will certainly don't have followers and there will be no trust.""… social media build it authority with content…"
F	Lack of Adequate Support from Management	"… mmm huh… the university management is not providing institutional barking…""… unfortunately, some of the librarians adopt social media applications on their own""… we …. desire training and retraining but we are not given the opportunities …"
G	No identified social media policy	"… In our library, there is no written down rules or policy for the social media applications. …""… the main library has no guiding principles for social media … and I cannot remember seeing it in any of our branches.""… there is no written policy, but the practices kept been maintained on and on with those that came before us, and we took after them …""… most of the things posted on Facebook were based on our experiences as information providers…"

Table 2 summarises the dissatisfaction and or the deterrent of the academic librarians' attitudes in earning trust, building a reputation, and maintaining social authority in the social media units of the academic libraries. Participants reveal that librarians turn social media platforms into personal usage. The platform that is meant for the library, the librarians use them to engage their colleagues in unnecessary dialogue and confrontation. Participants believe that there are different social media platforms for different kinds of media. Unfortunately, many are not aware and as such, they create content on different issues that are not meant on the customer's preference. Such attitudes in the social media arena mostly discredit the social media units in maintaining trust, reputation, and authority.

Furthermore, participants believe that content is the hallmark of attraction for followers in the social media units. Some lament that the content of social media is not convincing and is not attractive to the customers. A participant stated: *"... I have observed that social media in our library lack contents. It is my belief that social media triumph over the content. If there are no contents you will certainly don't have followers and there will be no trust. So, the social media unit builds its authority with content.* Bippa. While another participant felt that the social media librarians are not working as a team. *"I notice that we (librarians) are not working as a team. This has brought about the lack of organizing content on our platforms. This has also led to distrust and a lack of authority on our social media platforms.* Shock.

Participants also stated the rigid involvement of the university management that aims to place embargoes and sanctions on vital content that users have an interest in in the social media platforms. They felt that the management is not actually given full support for the social media units to be self-regulatory in terms of sourcing and disseminating information for the users. This also results in a lack of support on matters such as finance, staffing and training, and inadequate infrastructure for the social media in the academic libraries.

Participants also commented on the non-existence of policies in the social media units. Although that does not stop the functions of the units, however, the non-existence of social media policy

guidelines is a deterrent to social supremacy. According to them, the librarians kept maintaining on what they inherited from their successors and added also from their work experiences.

Discussion

This research investigates the academic libraries/librarians' activities in creating trust and reputation in order to earn social authority in academic libraries in Nigeria. The research employed Rogers's 2010 innovation-decision process to explore academic libraries/librarians' position and attitude toward social media authority in selected Nigerian academic libraries. Findings indicate that academic libraries and librarians in Nigeria are engaged in establishing credible content on their social media platforms as a result of the information explosion on the Internet. More also, it shows that the selected academic libraries in Nigeria are shifting focus from the traditional method of checking the authority and validity of information to an entirely new way of assessing reliability and validity of content in order to establish trust, reputation, and social authority. This is in line with Bradley (2015) that, social media has changed the way in which society works and especially the way librarians are doing their jobs. The study found academic libraries and librarians to have kept close interaction through sharing of social media links with other libraries for the purpose of gaining trust, reputation, and social authority. This concise with (Chu and Du, 2013) that the frontier strategy of social media involves interacting, sharing, building, and cultivating a community of interest within the platforms. Such activities aim at maintaining a consistent standard of content and authority on the social media platforms in the academic libraries.

The research found that in selected Nigerian academic institutions, librarians interact among themselves and the users on social media platforms purposely to promote awareness, build contacts, and as a well social authority. Invariably, academic libraries and librarians command authority in the social media units of the libraries as many users engaged on the social media platforms of their libraries (Bradley, 2015). Activities such as honesty and sincerity, proper evaluation of quality content and sources of information adequately, studying the users' needs in the academic environment to identify the

interest of the scholars, researchers, and regular users of the platforms are done in the social media units to earn the users' trust and gain reputation and authority of contents. Also, for the purpose to despise rumours and misinformation of data/contents, librarians undertake verification of sources of information by searching other platforms and databases to establish the validity and accuracy of the content. In the selected Nigerian academic institutions, social media librarians work hand-in-glove with the university management in most of their activities in order not to set division and disparity in the academic environment. The social media units ensure their readiness in complying with the management directives in every piece of content posted on social media platforms.   These actions are taken purposely to sustain the social media units so to earn trust and gain reputation and social media authority.

Despite the evidence of positive actions and experience of librarians' strategies to earn social media trust and reputation in order to maintain authority, there are often impediments constituted the flow of social media authority in the academic libraries. This mostly boils down to the academic librarians' attitudes as expressed by the participants. Eagly and Chaiken (1993) described the attitude as a psychological tendency that is expressed by evaluating a particular entity with some degree of favor. Some individuals have to stop using the library social media platforms as a result of challenges encountered with the behaviors of the academic librarians controlling the social media units. The usual reasons centered on the librarians' attitudes in managing the social media units of the libraries. The complaints are always such as delay in response to queries, not making use of the platform appropriately, negative responses, low level of ICT, individuals working against the survival of the platforms, inappropriate content, lack of support of the management, among others.   Some of the participants reported that they often got angry and become upset with the manners of comments from individuals on the platforms. Some are very apprehensive about social media applications. While others complain about the issue of lack of teamwork among the library staff which they felt that it also affects the reliability and validity of social media content. This in turn also decreases the number of

followers on the platforms because their belief is that social media triumph greatly on content. Where the contents are not convincing, it results in a lack of trust. Lack of trust diminishes the effectiveness of communication (Seeger, 2006; Slovic, 1999). Eventually, the perception of customers toward social media content diminishes as a result of a lack of reputation and social authority.

Consequently, social authority is built on the platter of trust and reputation. According to (Tenopir et al, 2015), trust is characterized by a certain measure of vulnerability, incidentally, vulnerability is being facilitated in the 21st Century through technology. In the same vein, (Corritore, Kracher, and Wiedenbeck, 2003) and (Kelton, Fleischmann, and Wallace, 2008) supported that computers have become part of social interactions so much that they are now objects of trust worldwide while Tenopir et al. (2015) further added that this consequence of technology-driven innovation may apply to websites and social media as well. Therefore, the users' trust and online reputation may all depend on the attached value estimated by the users of the social media content.

Incidentally, the features of the evaluation of social media content to earn users' trust online reputation and authority centered mostly on reliability, consistency, accuracy, timeliness, accessibility, objectivity, usefulness, reputation, and efficiency (Tenopir et al, 2015). Pickard et al, (2011 understood how the content of the information is presented, the type of information, citation, and the reason for posting on the social media platforms. In line with such that Zhao et al. (2012)describes as dangerous, to use mass media with high audience rating but low credibility to release information because it will cause new rumors or irrational behavior of the users. It is expected that information that is wealthy and well-delivered should influence social media users' feedback. Feedback in social media interaction provides scope to express an opinion as it involves the users and the sender of the message (Dennis and Kinney, 1998).

Conclusion and Recommendations

The main objective of this study is to explore the activities of librarians in creating users' trust and online reputation in order to earn social authority in

academic libraries in Nigeria. The study found out that the selected academic libraries establish social media with the purpose of marketing and creating awareness of the library's credibility to the users. The study revealed that the selected academic libraries and librarians have been striving hard to maintain social media authority in terms of contents and services in the libraries. This was evident in participants, demonstrating in various ways of how social authority is been maintained in the academic libraries. All the struggles are to gain users' trust, reputation and maintain social authority in the academic libraries. Irrespective of the struggles, still academic libraries' efforts to maintain trust, earn reputation, and social authority for the social media units have been very low. This is a result of librarians' social attitudes towards social media, academic librarians' apprehension and lack of adequate knowledge of ICT, and excessive level of control from the management among others (Agyekum, Arthur, and Trivedi, 2016; Akporhonor and Olise, 2015).

However, a standard strategy to verify the information is important regardless of the type of social media outlet. Hill (2016) remarks that "without a strategy, content is just stuff, and the world has enough stuff. Academic librarians ought to effectively strategise on the kind of content their customers have passionate as they follow their comments and responses. The content created will spread as the customers share it across which can give birth to *social authority* and establishes users' trust and reputation, provided the content created is informative, well written, and is of good value to the customers. The academic librarians should not shy away from being *contents conscious* in the social media units. It is paramount for social media librarians to define the purpose of the social media platforms in the library. It could be for education, awareness, entertainment or to be used to market the library activities. It is important also, to maintain constant checking of the social media homepage. The social media librarians should first trust the homepage and the contents with the assurance of its relevance to the intended audience. Bradley (2015) acknowledges that people believe and trust information professionals. Thus, he further advised

that librarians can leverage that trust by becoming beacons, pointing to good-quality information, irrespective of its origin. Meanwhile, if your customers know your firm authority on a given platform they will always be attracted to your website. Hence, authority attracts traffic and establishes a ranking in the social media arena (Bradley, 2015).

As the universe embraces the flow of information on the internet, (Zohoorian-Fooladi and Abrizah, 2014) advise that, librarians should understand how best to harness these technologies to enhance library services. Bearing in mind that the use of social media platforms has become inescapable in the lives of individuals in the 21st generation. Academic librarians should be compelled to demonstrate the spirit of honesty in diverse means which include knowing the users they serve and working *teeth-and-tight* with their parents' bodies in order to be trusted, earn reputation and possess social authority on social media content in the academic libraries. This calls for teamwork, professional experts in social media in LIS to interact professionally in order to reduce criticism on their social media content for the purpose of gaining users' trust, online reputation, and social authority. The fact is that, once trust is absent in social media content, there is the tendency of reinforcing distrust by users of the platforms which can also affect social media reputation and authority in the academic libraries. This formed part of the challenges of academic librarians in the social media environment.

Although this research is able to identify the activities of academic libraries/librarians in creating users' trust, reputation in order to maintain social media authority in academic libraries using Rogers 2010 Diffusion of Innovation. It is a qualitative research approach and is limited to only three university libraries in Nigeria. More study on other types of libraries will shade more light on how imminent are activities and attitudes of librarians are in creating users' trust, online reputation and social media authority in library services. Also, the study can be repeated to include more academic libraries globally in order to enhance more literature on users' trust, reputation, and social media authority in the library and information science profession.

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Awareness, Accessibility and Challenges of Social Media as Experienced by Postgraduate Information Studies Students, University of KwaZulu-Natal During the COVID-19 Pandemics Lockdown

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Abstract

Students who receive literacy training tied to real-life assignments show greater improvement in literacy scores. The significance of this study revolves round the prominent role accorded social media in academic community for research, teaching and learning. In spite of the benefits associated with the use of social media for academic purposes, it is observed that many students, teachers/lecturers have not been fully exploring these advantages to improve the academic performance. The study investigated the awareness, access and social media challenges encountered by postgraduate students of Information Studies, University of KwaZulu-Natal (UKZN) during the lockdown caused by COVID-19 pandemics. The study employed a quantitative research design in form of an online questionnaire, using Google Forms. Fifty-five post-graduate students were sampled, of which 51 participated, giving a response rate of 93%. The findings revealed (Facebook, Instagram, Zoom, Twitter and WhatsApp) as major (100%) types of social media available for post graduate students for their academic purpose. The findings further revealed smartphone as a major tool for accessing social media by the respondents (96%), and the major challenges restraining students from effectively utilising social media for academic activities. The study underscores the importance of social media in academic environment and offers some recommendations that could lead to more informed and effective use of social media for academic purposes.

Keywords: Awareness, Access, Social media, COVID-19 Pandemics, University of KwaZulu-Natal, South Africa

Introduction

This study is about awareness, access and challenges of social media encountered by postgraduate students of Information Studies, UKZN during the COVID-19 pandemic. Social media has brought a new paradigm of collaboration and communication. With social media, knowledge is formed through socialisation and communication, and barriers to physical proximity can be diminished through virtual proximity (Schwarz, 2012). This means that

interpersonal and intrapersonal communication can be promoted through the message medium (such as social media) and the information gap in academic learning can be eradicated.

The emergence of social media has generated a great deal of interest from researchers, and this study can also be viewed as part of this development. Gikas and Grant (2013) pointed out that social media are both Internet and mobile-based tools that enable people to discuss and share information. Therefore, the importance of the numerous social media platforms in improving the socio-cultural, economic, political, educational and technological development of nations and their citizenry cannot be overemphasised. In academia, as alluded to above, social media are being used to advance scholarship by institutions of higher learning globally. By their nature, social media have the capability of educating, informing and entertaining their audience (Gleason and Von Gillern, 2018).

The difficulty of determining what constitutes social media has been pointed out by Obar and Wildman (2015). For example, Obar and Wildman noted that the "challenges to the definition of social media arise due to the broad variety of stand-alone and built-in social media services currently available", but they also noted that they have some common features. These include: "all social media are interactive Web 2.0 Internet-based applications" (Kaplan and Haenlein, 2010). Social media have user-generated content like comments, digital photos, and data generated through online interactions (Obar and Wildman, 2015). According to Boyd (2007), "all social media have user-created service-specific profiles for the website or app that are designed and maintained by the social-media organization." Furthermore, social media aid the development of online networking by connecting a user's profile with those of other individuals or groups" (Obar and Wildman, 2015).

Among the most frequently cited advantages of the use of social media by students is their ability to aid collaborative learning and communication amongst their peers and others in academia (Ketonen-Oksi, Jussila and Kärkkäinen, 2016; Khan, 2017). Further, the commonly stated benefits of social media are their notable capability to aid digital literacy and information distribution. Among the examples of such media are blogging tools used by many students to circulate information among their peers and persons worldwide (Ahmad, 2014; Aria and Izadpanah, 2017). Other than communication, academics who use Twitter refer to "information distribution" as one of the main advantages of using the medium. Its use has proven popular, particularly in academic conferences (Holmberg and Thelwall, 2014).

Social media sites benefit students by providing platforms that foster communication and life-long learning, and facilitate access to distance and open education, e-learning resources and e-libraries (Saleh, 2020). Lecturers who impart knowledge to students also benefit from the use of social media by sharing educational materials, exchanging ideas, reading through colleagues' research, getting updated on research trends and, most significantly, establishing their own professional networks (Akram and Kumar, 2017). Social media created precisely for educational audiences a distinct opportunity for those audiences to learn and create a robust academic discussion among themselves. They also encourage personal connections that can lead to the establishment of new information and knowledge. Furthermore, *social media have the potential to aid more rapid interactions between libraries and their users* (Ezeani and Igwesi, 2012) *regardless of where the users are located or how they decide to learn or access the library services and resources.*

Apparently, from the researchers' observation and participation, academic activities (which include; assignments, classwork and the sharing of educational materials) carried out by the students of UKZN, Department of Information Studies, Pietermaritzburg campus are increasingly being conducted with information in digital format, and students are formulating coursework, making study notes and analysing data for their research projects, using the information in such a format. One could rightly conclude that students' digital literacy improvement may have been a drive to social media utilisation. With argument that use of social media cause a lot of distractions, that could lead to decrease in academic success (Hettiarachchi, 2014), it was observed that while students are using social media to carry out various functions (such as; socialise, play games, share news, share pictures and videos, etc.), they were also increasingly using social media for more academic purposes. It was this latter use of

social media that prompted the researchers' interest and provided the context in which the study needs to be comprehended.

Statement of Problem

Ever since late 2019 that the COVID-19 has been ravaging humankind, social and physical distancing has been encouraged in all facets of human endeavours. The adoption of social media to carry out various responsibilities has been widely encouraged. Despite the benefits that can be derived from the use of social media for academic purposes, as alluded to in the literature, the challenges of social media include issues (among others) such as access, delivery, originality and copyright, which have led to information access constraints (Park, 2010; Al-Rahmi and Othman, 2013), as academic materials are not freely accessible. In addition, students and teachers/lecturers are sometimes not up to date in terms of using social media for teaching and learning and are not familiar with integrating and taking advantage of social media application (APP) software in their teaching and learning (Abdul Wahid and Sajiharan, 2019). This will negatively affect their ability to take full advantage of using and accessing social media for academic purposes. There are also financial implications such as the cost of data and cost of buying social media enabled phones (smartphones), tablets and laptops (Chawinga, 2017; Pindayi, 2017). If not resolved, all these problems are capable of contributing to poor academic performance among the students and reducing their success rate. The gap this study seeks to address.

Significance and Importance of the Study

The significance of this study comes from the topic, which is centred on the importance of social media in academic activities, especially at this period when social and physical distancing is being emphasised as a result of COVID—19 pandemic that is ravaging the human race. This virus, according to World Health Organization (WHO), spreads mainly among people who are in close contact with each other, for example at a conversational distance. In this research, its topic is investigated in term of awareness, accessibility and challenges of social media as experienced by postgraduate information studies students of University of KwaZulu-Natal

during the lockdown. The study inquired various types of social media available, how they are being accessed for academic purposes and the challenges experienced when using social media for academic purposes during the lockdown.

Objectives of the Study

The aim of this study is to find out, in terms of awareness, accessibility and challenges of social media, the experience of postgraduate information studies students of the University of KwaZulu-Natal, South Africa during the lockdown occasioned by COVID-19 pandemic.

Research Questions

Based on the objectives of the study, the following research questions were asked:

- What are various types of social media available to postgraduate students of Information Studies, UKZN?
- Where do students access social media for academic purposes?
- What are the challenges experienced by students when using social media for academic purposes?

Literature Review

Social Media and their Significance

While social media have their disadvantages such as the decrease in face-to-face communication, the conveying of inauthentic expression of feelings and being a cause of distractions (Drahošová and Balco, 2017), their advantages are significant and it is these advantages that are focused on below. For example, Bryer and Zavatarro (2011) stated that social media are important technologies that facilitate collaboration and social interaction and enable discussion among stakeholders worldwide. In South Africa (and elsewhere), social media are an important development for online participation where people share, contribute and communicate knowledge and content on the Internet. As alluded to by various scholars (Al-Bahrani, Patel and Sheridan, 2015; Collins and Halverson, 2018; Gikas and Grant, 2013; Gleason and Von Gillern, 2018; Goldstuck, 2012; Hyde-Clarke, 2014; Kircaburun, Alhabash, Tosunta°

and Griffiths, 2020; Oeldorf-Hirsch and Sundar, 2016; Omaggio, Baker and Conway, 2018; Rutherford, 2010) across the globe, the use of the Internet, and social media networks in particular, are becoming progressively more relevant for 21ˢᵗ-century politics and education. They facilitate the sharing of knowledge and social cooperation on open-access platforms. People who have common interests can share information via the various social media platforms that are available. These have further expanded discussion online where people create content, share, bookmark, use social networking sites to post a resume and search for potential employers in order to find a job.

Finally, Murire and Cilliers (2017) summarised the important benefits of using social media, which include: "increasing social interaction; providing access to information sources; encouraging creativity among individuals and groups; creating a sense of belonging among users; providing more choices to promote engagement among individuals and groups; reducing barriers to group interaction and communications; and increasing the technological competency levels of users."

How and where Students Access Social Media for Academic Purposes

In ascertaining how and where students in higher learning access social media for academic purposes, Karlson, Iqbal, Meyers, Ramos, Lee and Tang (2010) in their study revealed that mobile devices such as smartphones, iPads, tablets and Kindles have enabled social networking to take place across numerous platforms. The social networking sites are normally accessed from homes and institutional libraries by the students in higher learning. In Nigeria, Shehu and Shehu (2014) conducted a study among Ahmadu Bello University students, and found out that 52% of respondents accessed social networking sites via their cell phones, while 33% of the respondents accessed them through their laptop computers. Those students that could not afford personal cell phones or laptops used cyber cafés and they constituted 10% of the respondents. Similarly, Heinrichs, Lim and Lim (2011) carried out a study on "the influence of social networking sites and user access methods on social media evaluation". Their findings revealed that individuals used desktop computers and mobile devices (such as notebooks) as methods to access the social networking sites. These findings are similar to that of Sobaih *et al.* (2016) and Shava and Chinyamurindi (2018) who in their studies found that laptops and smartphones were the most used methods for accessing social media for academic purposes by students and this was largely done from their homes.

In South Africa, a study was conducted by De Kock and Futcher (2016) to investigate students' motives for utilising social media network sites within higher education institutions. The study revealed that the highest number of respondents (46%) used social media through their mobile phones, 23% of the respondents used laptops only, while 30% of the respondents used both mobile phones and laptops. Other studies in South Africa such as those of Ng'ambi, Brown, Bozalek, Gachago and Wood (2016), Murire and Cilliers (2017) and Harerimana and Mtshali (2018) also found that students mainly accessed social media for academic purposes through their mobile phones and laptops. Finally, Lembani, Gunter, Breines and Dalu (2020) compared the digital divide and access points between rural and urban distance education students in South Africa. It was revealed that "UNISA students seemed to create a general hierarchical location of access to a computer (social media) as Home access (31%), followed by Work access (21%), UNISA LAN centres (15%) and Public access such as Internet cafés (4%) for students living in urban areas while non-urban dwellers were: Work access (19%), UNISA LAN centres (11%), Home access (11%) and Public access (19%)". It is evident that where UNISA students live influence where they access social media,

Challenges Experienced when using Social Media for Academic Purposes

Despite the enormous benefits derived from using social media, critics maintain that there are many challenges to using social media for academic purposes, particularly in developing countries. Jain (2014) identified the challenges that students at the University of Botswana faced in using social media. These were a lack of awareness, bandwidth problems, technophobia, a lack of maintenance culture, an unreliable power supply and copyright

issues. Sanusi, Omowale and Kayode (2014) revealed that the constraints that students in Nigeria face in the use of the social media for education included a lack of basic amenities, lack of a conducive environment, lack of access to computers, the cost of Internet connectivity and a lack of enthusiasm on the part of instructors.

In different studies conducted in Malaysia and South Africa by Yin Lim, Agostinho, Harper and Chicharo (2014) and Shava and Chinyamurindi (2018) respectively on the engagement with social media technologies by students and academic librarians in South Africa that most of the respondents (81.48%) indicated that the main challenge affecting the use of social media for academic purposes was the blocking of some applications by their university, slow Internet connection/low bandwidth (62.96%), privacy issues (44.44%), hacking of social media accounts, lack of time, lack of access to the Internet, lack of interest in online groups, and the lack of the necessary skills. It was noted that some of the academic librarians did not have the necessary skills to engage students on social media – a finding which might well apply to some academic staff (lecturers) as well. Also noted by the librarians were the cost implications of using social media for academic purposes.

Summary of Literature Review

Based on the gap in the research, coupled with the COVID-19 pandemic which has posed serious threat to physical teaching and learning, the researchers explored the importance of social media in education (specifically, in research, teaching and learning) as being globally encouraged to adopt. According to Leonardi (2014), social media have a specific application that provides various ways to communicate visually, and that social media are a form of knowledge sharing and innovation, particularly in the educational sector. As pointed out, social media also contribute to digital literacy as well as an information learning environment (Meyers, Erickson and Small, 2013). This view is supported by Lam (2015) who argued that the problem of isolation in learning could be remedied through social media and online learning, and especially with effective communication among students. Lam (2015) further revealed that social media allows

students to develop higher-level thinking skills and increases their confidence and self-esteem in their various learning courses. As revealed in literature, social media provide an opportunity for discussing and sharing course-related topics and for fostering collaborative connections across content areas. Social media also provide a remedy to the problem of isolation or distance in learning.

Methodology

The study adopted a quantitative approach. A structured questionnaire was designed to collect quantitative data. This type of research method is not simply amassing and tabulating facts but includes proper analyses, interpretation, comparisons, identification of trends and relationships.

In terms of pretesting, the instrument (questionnaire) used in the study was distributed to 10 postgraduate students from disciplines other than information studies but within the social sciences. Based on the feedback received from the students participating in the pre-test, the instrument was adjusted. Some questions were reframed, and Pinterest and MS Teams were added to the lists of social media as suggested by the respondents. In addition, "No specific place/ 'On the go'" was also suggested and added as one of the response options concerning where students access social media. The questionnaire that was finally administered for the study sample thus included the suggestions which emerged from the pre-test.

The questionnaire was made available via Google Forms – a Web-based application that allows one to generate and edit surveys online. Using this approach, the postgraduate information studies students who were targeted received a message (either via email or WhatsApp) with a link to the Web-based questionnaire, which was compatible with mobile devices. Included in the message was a request to complete the questionnaire and other information related to the study. The completed copies of questionnaire were submitted online and subsequently downloaded by the researcher. This approach helped the study comply with UKZN's online teaching and learning strategy arising from the COVID-19 pandemic.

The population of the study consisted of postgraduate students in the Information Studies

Programme on the Petermaritzburg campus of the university of KwaZulu-Natal. There are five programmes, and the total number of students registered in 2020 numbered 80 as indicated in Table 1.

Table 1: Study Population : Information Studies Programme

Programme	Number of Students
Coursework Masters	7
Honours	15
PGDIS	33
Subtotal	**55**
PhD and Research Masters	25
Total	**80**

In selecting the sample, a purposive sampling technique was adopted. The technique was adopted because the selected respondents had a particular set of characteristics, e.g. experience, knowledge, course-work, skills, exposure, etc. However, the PhD and Research Masters students were excluded on the basis that their studies were purely research-based with no course-work components. As reflected in Table 1, the sample study (subtotal) is 55 (69%) of the postgraduate students in the Information Studies Programme.

The data obtained through the research instrument were arranged and analysed using quantitative analysis. Before analysing the raw data, each completed questionnaire via the web was downloaded and checked for missing data, ambiguity,

omissions and errors. For instance, it was discovered that some respondents skipped answering some of the questions. It was for this reason that the charts which were automatically generated by Google Forms were not used. Rather, to reflect the no responses, the data from each of the questionnaires were input into an Excel spreadsheet, and new charts and tables reflecting the no responses were generated. Thus, the analysed data (the findings) were presented in the form of tables and charts and were expressed as frequency counts and percentages.

Findings

In a bid to investigate awareness, access and challenges of social media by postgraduate students of Information Studies, UKZN, various types of social media available to postgraduate students of Information Studies, UKZN, how and where do students access social media for academic purposes as well as the challenges experienced by students when using social media for academic purposes are presented and discussed.

Demographic Characteristics of Respondents

This section provides the demographic characteristics of respondents in the study which are gender and age. Table 2 presents the results. There were more male (65%) than female (35) postgraduate students of Information Studies, UKZN. Further, majority (33%) of the post graduate students of Information Studies, UKZN were

Table 2: Demographic characteristics of respondents

Variables		Responses	
		Frequency	**Percentage (%)**
Sex	Male	33	65
	Female	18	35
	Total	**51**	**100**
Age	18-20	1	2
	21-25	4	8
	26-30	17	33
	31-35	15	29
	36-40	7	14
	>40	7	14
Total		**51**	**100**

Note: N=51

between the ages (26 - 30).

Research question 1: Awareness of Social Media Available

Table 3 shows that majority of students were aware of most of the listed social media. Facebook, Instagram, Zoom, Twitter and WhatsApp were the social media that all 51 (100%) respondents were aware of. The social media that students were least aware of were MS Teams 24 (47%) followed by Pinterest 22 (43%) and ResearchGate with 11 (22%) respondents. Other social media not listed but mentioned by 18 (35%) respondents are; TikTok, Telegram, WeChat and Quora. As can be seen in Table 3, Telegram and Quora were the most-mentioned social media not listed. Also mentioned were Sci-Hub, SciFinder, Gmail and Outlook, none

Table 3: Awareness of social media available

Social media	Aware	Percentage (%)	Not aware	Percentage (%)
Facebook	51	100	0	0
Instagram	51	100	0	0
Zoom	51	100	0	0
WhatsApp	51	100	0	0
Twitter	51	100	0	0
YouTube	50	98	1	2
LinkedIn	49	96	2	4
Skype	48	94	3	6
Google+	48	94	3	6
Blogs	42	82	9	18
ResearchGate	40	78	11	22
Pinterest	29	57	22	43
MS Teams	27	53	24	47
Others	TikTok 2 (3%), Telegram 4 (8%), WeChat 3 (6%), Quora 4 (8%), Sci-Hub 1 (2%), SciFinder 2 (4%), Gmail 1 (2%) and Outlook 1(2%)			

Note: N=51

Question 2: How Social Media are Accessed by Students

Table 4 presents the results on how social media are accessed by the students. The most used "tool" or method to access social media was the smartphone as mentioned by the vast majority, 46 (96%) of the respondents. Closely following the smartphone were the 42 (88%) respondents who used laptops to access social media. At the other extreme, the significantly less used tools or methods to access social media were tablets, as mentioned by a quarter (25%) of the respondents and personal computers mentioned by 19 (40%) respondents.

Table 4: How social media are accessed

Access method	Yes	%	No	%	No response	%
Smart phone	46	96	0	0	2	4
Laptop	42	88	2	4	4	8
Personal Computer (PC)	19	40	8	17	21	44
Tablet	12	25	14	29	22	46

Note: N=51

of which are social media *per se*.

Question 3: Where Social Media are Accessed

Table 5 reveals the findings relating to where the students access social media for academic purposes. Most respondents, 41 (85%), accessed social media for academic purposes from their homes. Access from home was followed by some distance by the university library and the university LAN mentioned by 21 (44%) and 19 (40%) respondents, respectively. Also interesting is that 23% of the students mentioned "No specific place/'On the go'" pointing to the fact that learning can take place anywhere and anytime – students do not need a "fixed" location to access the Internet for learning and studying purposes. The least used access point was an Internet café, with 4 (8%) respondents indicating this. A place not listed but mentioned under "Other" was the public library

Table 5: Where social media accessed N=48

Access point	Yes	%	No	%	No Response	%
Home	41	85%	1	2%	6	13
University Library	21	44%	5	10%	22	46
University LAN	19	40%	3	6%	26	54
No specific place/"On the go"	11	23%	11	23%	26	54
Internet café	4	8%	15	31%	29	60
Other	Public library 5 (10%)					

Question 4: Extent to which Challenges are Constraints to Access and Use of Social Media for Academic Purposes

Table 6 presents the results on the extent to which the challenges were identified as constraints to access and use of social media for academic purposes. The two challenges identified by just under half 25 (49%) of the respondents as a significant constraint were the "High cost of subscription to Internet data bundles" on the one hand and "Poor Internet connectivity" on the other. The third challenge identified as a significant constraint was also a financial one, namely, the "High cost of social media enabled phones (smartphones)" mentioned by 16 (31%) respondents. When adding the number of respondents who identified the three challenges as constraints (either a significant constraint or a constraint) the total percentage of respondents total well over 50% that is, 78%, 77% and 69% for the three challenges respectively. While not a significant constraint "Low ICT literacy" was nonetheless mentioned as an overall constraint by 35 (69%) of the respondents. A similar number 36 (71%) mentioned "Poor knowledge of social media application software and sites" as an overall constraint as well. The finding regarding apathy on the part of friends when it comes to using social media mentioned by 40 (78%) of respondents as an overall constraint.

Table 6: Extent to which challenges are constraints to the use of social media for academic purposes

Challenges	Significant constraint	Constraint	Minor constraint	Not a constraint
High cost of subscription to internet data bundles	25 (49.0%)	15 (29%)	9 (18%)	2 (4%)
High cost of social media enabled phones (smartphones)	16 (31%)	19 (37%)	10 (20%)	6 (12%)
Poor internet connectivity	25 (49%)	14 (28%)	9 (18%)	3 (5%)
Low ICT literacy	5 (10%)	17 (33%)	13 (26%)	16 (31%)
Low awareness of the social media for academic purposes	8 (16%)	16 (31%)	12 (24%)	15 (29%)
Apathy of friend to communicate academic issues	10 (20%)	17 (33%)	13 (26%)	11 (21%)
Poor knowledge of social media application software and sites	11 (22%)	10 (20%)	15 (29%)	15 (29%)
Other	N/A			

Note: N=51

– mentioned by 5 (10%) respondents.

Discussion

Findings revealed that majority of students were aware of most of the listed social media. Facebook, Instagram, Zoom, Twitter and WhatsApp were the social media that all 51 (100%) respondents were aware of. The social media that students were least aware of were; MS Teams 24 (47%), followed by Pinterest 22 (43%) and ResearchGate with 11 (22%) respondents. Several factors might be responsible for the awareness (or not) of the various types of social media ranging from the type of communication tool or method used by the students to their level of exposure to information and communication technologies (ICTs). The latter, in particular, could play an important role and would include the extent to which their peers and family members are embracing social media (and which types). In terms of the former, not all phones and tablets, for example, are compatible with all social media. Still, the extent to which this influences students' awareness of them is debatable. Nonetheless, the findings agree with those of Gambo and Özad (2021), who reported that Facebook, Instagram, Zoom, Twitter and WhatsApp

have a dominant presence among the majority of the students who participated in their study. As of 2020, Facebook had 1.69 billion users, WhatsApp had 2 billion, Instagram had 855 million, Zoom had 200 million daily participants, and Twitter had 330 million users – numbers pointing to their popularity worldwide. These numbers, no doubt, will also include postgraduate Information Studies students, UKZN.

Other social media not listed but mentioned by 18 (35%) respondents are; TikTok, Telegram, WeChat and Quora. As can be seen in Table 2, Telegram and Quora were the most-mentioned social media not listed. Also mentioned were Sci-Hub, SciFinder, Gmail and Outlook, none of which are social media *per se*. The first two provide access to research literature while the latter two are email programs, and they being mentioned does illustrate some confusion on the part of respondents concerning what social media comprise as well as the difficulty of defining social media as pointed in literature review (Chung, Han and Koo, 2015; Zanamwe, Rupere and Kufandirimbwa, 2013).

As revealed in the findings, the most used "tool" or method to access social media was the smartphone as mentioned by the vast majority, 46

(96%) of the respondents. One can assume that this was largely due to the prevalence of mobile phones with Internet capabilities (smartphones) as made available by different companies at what could be considered an "affordable" cost. This has allowed cash-strapped students to acquire, in the main, Android-based phones that can access various social media. This finding is consistent with that of Mbodila et al. (2014), who, in their study on the effect of social media on students' engagement and collaboration at a South African university, found that most of the students accessed the social media through their mobile/cell phones. A similar finding was made by Shava and Chinyamurindi (2018) in their study of the determinants of social media usage by students in South Africa. Closely following the smartphone were the 42 (88%) respondents who used laptops to access social media. This finding is in line with Sobaih et al. (2016), who, in their study on the use of social media in higher education in developing countries, found that laptops and smartphones were the leading tools or methods for accessing social media for academic purposes. At the other extreme, the significantly less used tools or methods to access social media were tablets, as mentioned by a quarter (25%) of the respondents and personal computers mentioned by 19 (40%) respondents.

As regards, where the students access social media for academic purposes, findings revealed that most respondents, 41 (85%), accessed social media for academic purposes from their homes. This is in line with Manca and Ranieri (2016), who stated that students prefer to sit in the comfort of their home to connect to online teaching and learning. It is also in line with communication theory, which states that "barriers to physical proximity can be diminished through virtual proximity". Importantly, due to COVID-19, the UKZN campuses were closed for much of 2020, meaning that students had little option but to operate from home, given that the LANs and the library on the PMB campus were not accessible. This would almost certainly have influenced respondents answering this question. Access from home was followed by some distance by the university library and the university LAN mentioned by 21 (44%) and 19 (40%) respondents, respectively. This usage does probably reflect, to some extent, the behaviour of students prior to the closure of the

university. What is evident, however, is that, in general, students are making less use of the physical library as library holdings become increasingly digitised (Chawinga, 2017). Also interesting is that 23% of the students mentioned "No specific place/ On the go" pointing to the fact that learning can take place anywhere and anytime – students do not need a "fixed" location to access the Internet for learning and studying purposes. The least used access point was an Internet café, with 4 (8%) respondents indicating this. This lack of usage might well be connected to the cost implications associated with the use of Internet cafés or not having such facilities nearby or available. A place not listed but mentioned under "Other" was the public library – mentioned by 5 (10%) respondents. Most public libraries in South Africa provide free access to the Internet as a basic service.

On the extent to which the challenges were identified as constraints to access and use of social media for academic purposes, findings revealed the two challenges ("High cost of subscription to internet data bundles" and "Poor internet connectivity") as identified by just under half 25 (49%) of the respondents as a significant constraint. The third challenge identified as a significant constraint was also a financial one, namely, the "High cost of social media enabled phones (smartphones)" mentioned by 16 (31%) respondents. When adding the number of respondents who identified the three challenges as constraints (either a significant constraint or a constraint) the total percentage of respondents total well over 50% that is, 78%, 77% and 69% for the three challenges respectively.

The high cost of data is probably the major reason why universities in South Africa took it upon themselves to provide data to students during this era of COVID-19. The need to conduct teaching and learning online and the data usage that this entailed (and the associated cost) on the part of the students was recognised by the institutions and the provision of free data would "cushion" the financial demands being made on the students. As noted above, at the UKZN, the university libraries and LANs were closed for most of the year. There was thus no "free" Internet access as such available to students. While students were given 10 gigabytes of data per month, this was not adequate and despite the Students Representative Council's intervention to have the

allocation increased, this amount remained. Students who had used up their allocation before month-end were then required to pay for their Internet access through an Internet Service Provider (ISP) or through data bundles provided by the cellular companies.

The UKZN also provided students subsidised laptops to enable distance learning and that also enabled their use of social media for academic purposes. In line with the findings of this study, Letseka, Letseka and Pitsoe (2018) in their study which investigated the challenges of e-learning in South Africa, identified the cost of Internet connectivity and social media enabled phones as significant factors hindering the use of social media by students. While not a significant constraint, "Low ICT literacy" was nonetheless mentioned as an overall constraint by 35 (69%) of the respondents. A similar number 36 (71%) mentioned "Poor knowledge of social media application software and sites" as an overall constraint as well. Both findings are of concern and suggest that there is room for training and awareness-raising regarding ICT literacy and the use of social media on the part of the university and specifically on the part of academic staff and the university library. The finding regarding apathy on the part of friends when it comes to using social media mentioned by 40 (78%) of respondents as an overall constraint also suggests the need for intervention in terms of raising awareness of the benefits of using social media for academic purposes.

Implications of this Research

This study is worthwhile in providing a platform for education stakeholders, particularly university management to resolve the challenges preventing students from using social media for academic purposes, and equally have reasons why social media must be fully adopted in teaching, learning and research activities. This is imperative given that the lockdown imposed globally has not been completely lifted, particularly in South Africa, and teaching, learning and research activities must not be jeopardised because of the restriction in physical contact. In addition, this study would empower students, lecturers and researchers to reconsider their orientation and traditional approaches to teaching and learning as well as research, and instead lay more emphasis on holistic adoption of social media

in carrying out their academic activities.

Conclusion and Recommendations

This study addressed the issue of awareness, access and social media challenges encountered by postgraduate students of Information Studies, UKZN during the COVID-19 pandemics. Social media have created a platform of communication that has changed the mode of social interaction significantly during this pandemic. The opportunity to engage in instant messaging, photo sharing, video sharing and document transfer has allowed millions of users to utilise this platform for various purposes. Given this and in light of the main findings as revealed in this study, the following specific conclusions are made:

1. The most used method or "tool" to access social media for academic purposes by a significant majority of the respondents was the smartphone. This was arguably due to its relative affordability (as opposed to laptop computers and PCs).

2. The vast majority of respondents accessed social media for academic purposes from the comfort of their homes. It could also be argued that this was due to the fact that students were not being allowed on campus as a result of COVID-19 restrictions.

3. Finally, two of the most mentioned challenges to the use of social media for academic purposes by postgraduate students of Information Studies, UKZN during the COVID-19 pandemics, were finance-related, namely, the "high cost of subscriptions to internet data bundles" and "high cost of social media enabled phones (smartphones)". Poor Internet connectivity was also a factor in social media use as equally mentioned by the respondents.

Based on the findings, it is recommended that the government, in collaboration with the institutions of higher learning, should provide an enabling environment (which includes; provision of laptops with internet data bundles for the students) that will encourage adoption of social media for academic activities. The enabling environment will create room for a seamless adoption of distance learning and teaching approach. This approach will greatly facilitate better quality teaching and learning, and equally help in adherence with COVID-19 protocols.

Also, there should be regular training and awareness-raising regarding ICT literacy and use of social media for academic purposes for not only the students but also for members of the academic staff. The training could be spearheaded by the UKZN library staff in particular as part of their user education services. When both students and staff are armed with the knowledge and skills relating to ICT literacy (including social media literacy) and the benefits associated with awareness and access to social media for academic purpose, this will lead to more informed and effective use of social media for academic purposes.

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Information Literacy and Research Skills Programme for Postgraduate Students: The First-Hand Experience of a Federal University of Agriculture in Nigeria

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Abstract

The study was carried out to assess the first-hand information literacy (IL) training organised for the postgraduate students of the Federal University of Agriculture, Abeokuta-Nigeria. The study adopted the survey research design using questionnaire as the only data collection instrument. Participants of the training were randomly selected (by a joint Team of the Postgraduate school and the University Library led by the Dean and the University Librarian) across colleges offering postgraduate programmes in the university. The following modules (designed and facilitated by Academic Librarians of the Library) were covered by the training, the roles of library in research, using the Basic MS Word for research, reviewing the literature, reference management software with focus on Mendeley, introduction to e-resources, citation and referencing, copyright and plagiarism, information sourcing, analysis and interpretation, and the use of reference feature in MS Word for creating and managing bibliographies. The ICT Resource Centre of the University was also approached to make internet available for effective delivery of the Internet-based aspects of the Training. Copies of questionnaire were administered on all the 34 participants at the end of the two-day training. Responses garnered from respondents were positive and encouraging as the postgraduate students were favourably disposed towards the training and desired its continuity annually. Few of the ripple effect of the training are an annual University-wide IL Training for undergraduates in their final year of study, special request from three different departments of the university to collaborate with academic staff members of the university library to teach the Use of Library Information Resources and Information Literacy as an aspect of Research methods in their different disciplines, drafting and development of a standard and Tailored-IL Curriculum based on disciplines of each College and the training also boosted the image of the Library and Librarians within the University Community.

The study concluded by proffering better ways of incorporating and running information literacy programmes for postgraduate students not only at the Federal University of Agriculture, Abeokuta, but in other universities in Nigeria and other climes.

Introduction

The increase in the growth of information and communication technology has contributed to overflow of information, making information available everywhere in different formats which are increasingly important in the current environment of speedy change in technology. The paradigm shift is now too much information rather than inadequate or

lack of information. Despite this, it may still be difficult to find ready information that is useful in meeting certain needs. In other words, not all information is useful despite their availability. It is therefore, very important to know how to evaluate information because of the complexity of this environment; hence, the need to possess a set of abilities that would make one capable of knowing and locating useful and effective information. This is why the knowledge of information literacy is important especially to students and researchers. Information literacy (IL) does not involve using information rightly alone, it also include the ability to use information technology facilities in managing information which often requires training and knowledge.

Information literacy is a skill that forms the basis of a lifelong learning with individuals faced with diverse information choices in their academic endeavors, the work place, and in their personal lives. Hence, training in information access and use should be paramount in education. Furthermore, availability and accessibility of information literacy tools is essential to the learner. Consequently, an information literate person is one who possesses analytical and critical skills to search for and access varieties of information types in different formats in order to meet his or her information needs. Thus, Liu and Sun (2011) defined information literacy (IL) as the ability to apply information technology tools; ability to obtain information initiatively; ability to review, collect, use, deliver and exchange information; good coordinative awareness and cooperation ability; information immunity and information ethics cultivation; ability to use the information obtained to solve problems and carry out creative thinking activities.ACRL (2000) also define information literacy as a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information."

Shane (2016) further, described IL as a set of characteristics that transform an ordinary student into a wise information consumer and lifelong learner. Information literacy therefore, can be said to be an act of becoming skilful and learned in the use of information. According to Fernandez-Villavicencio (2010) the goal of Information literacy is to help people become more efficient and effective in solving

their problems and making their decisions in an increasingly digital networking-based society rather than a physical document-based environment.

Consequently, Rader (2009) opined that Information literacy is a broad term that combines a number of literacies which include library literacy, media literacy, computer literacy, internet literacy research literacy and critical thinking skills. Hence The Chartered Institute of Library and Information Professionals (CILIP) (2014) defined IL as "knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner".

The process of researching, writing and presenting coursework assignments represented the key context for information literacy (IL) development among students. In particular, the final year research projects which are required components of both undergraduate and graduate degree programs in all disciplines, serves as opportunity for students to "take ownership" of their subjects, and develop independent view of their disciplines and the structures of scholarly communication that underpin it. This process, however, may appear to be somewhat unreliable, because it has been observed that students often receive very little formal training on how to do research or write academic research projects. Consequently, students might be expected to approach their research projects in a "learn by doing" mode, guided by their supervisors on a semi-regular basis (McGuinness, 2006).

Information literacy is a practical and strategic concept guiding the library field's efforts in teaching information seeking and using skills. It evolves in the course of realizing specific work-related tasks and mundane activities, which usually involve a complex system of social relationships, sociotechnical configurations, and work organization (Tuominen, Savolainen, and Talja, 2005).

Libraries and librarians as custodians of information and knowledge are useful in this respect, libraries plays leadership role in faculty development efforts in universities all over the world. Librarians and teaching faculty can contribute to these skills in mutually reinforcing manner. In this case, information literacy skills can be fostered through the use of active learning strategies in which the librarian facilitates activities that promote an engaged flexible approach to the in-formation-seeking process.

Therefore libraries, especially the university libraries being citadel of learning as part of their information facilitating roles, are expected to be in the forefront of providing IL training for both the students and faculty staff of the university. From the perspective of a situated understanding of learning and learning requirements, information literacy skills cannot be taught independently of the knowledge domains, organizations, and practical tasks in which these skills are used, therefore researchers legitimized and motivated librarians' efforts in education for information literacy (IL) by defining it as a part of the wider literacy continuum and by coining the concept of lifelong learning (Eisenberg and Berkowitz, (1990).

The main objective of any university library among other is to support learning, teaching and research activities but the environment of teaching and learning is constantly changing resulting to new expectations of the users to be met by the library. This expectation can rightly be met through a well-structured information literacy programme. Postgraduate students comprises one of the key users of the university library, and most times it is assumed that they are matured students who doesn't need help and are often neglected by the library's users' orientation programmes. However, as part of its efforts to correct this anomaly, 'Nimbe Adedipe Library, Federal University of Agriculture, Abeokuta recently embarked on offering IL training to postgraduate students. This started on one-on-one basis but as more students began to demand for the training, the Automation Department of the library wrote a proposal to the University Management and the Postgraduate School to embark on a university-wide IL training for postgraduate students in June 2015 which was approved. The library has since then, been conducting IL training for the postgraduate students to adequately prepare them for their studies and subsequent research work as well as for the larger society.

Statement of the Problem

It is often assumed that postgraduate students have competent research skills with critical minds and can handle information well in order to see them through their studies. This assumption forms part of the criteria for selecting them for admission into the various programmes of study by majority of universities in Nigeria. It has however been observed that this assumption does not hold for a larger percentage of these postgraduate students. This is because; most postgraduate students sometimes have knowledge gaps about finding and using information, having come from diverse educational backgrounds. These often inhibit their performance as researchers. Closely related to this is that many of them do not understand the ethical and legal issues involved in using information which often times lead them to the problem of plagiarism and violation of copyright law. In furtherance to this, it has also been observed that the only pact that students have with familiarisation or orientation on library use is the fresher's orientation programmes usually run by most universities in Nigeria during the first week of undergraduates' resumption into the university which is usually not thoroughly done as to guide students in using information for academic purposes. It is against this background that this study aimed at assessing the Information literacy training program for postgraduate students of Federal University of Agriculture, Abeokuta embarked upon by the 'Nimbe Adedipe Library a couple of sessions ago, with the aim that, findings from the study would help improve on the programme and possibly set the pace for other Universities in Nigeria and other nations of the world to adopt.

Objectives

The main objective of this paper is to assess the information literacy (IL) programme organised for the postgraduate students and see whether it met their needs and examine aspects of the programme that needs improvement. The following specific objectives will also guide the study:

i. to examine the postgraduate students' perception about the programme offered by the library;

ii. to find out whether the programme was relevant to the Postgraduate students' information needs;

iii. to find out whether the IL training was well packaged;

iv. to look out for aspects of the programme that needs improvement;

v.   to extract information which can help conclude whether or not the objectives of the programme were met and;

vi.   to provide a template for other universities in the country and other parts of the Globe on the role that the University Library can play in supporting the research programmes of postgraduate student.

Theoretical Frame Work and Review of Related Literature

The Social Constructivism Theory propounded by Vygotsky (1978) was adopted for the study. Vygotsky emphasized the importance of interaction with others such as peers, teachers, and parents in order to build knowledge. He also emphasizes the need for tools such as language and computers to mediate knowledge construction. The Social Constructivism Theory is seen as the main theoretical base for information literacy. The theory was adopted because, it gives learners a concrete, contextually meaningful experience through which they search for patterns, raise their own questions, and construct their own models, thereby making learning what it ought to be, seeing the meaning or significance in a social experience or concept.

Information literacy skills (IL) among others includes library search skills and information technology literacy, it is not just about finding and presenting information, it is also about advanced analysis, synthesis, critical thinking and problem solving. It involves seeking and using information for independent learning, lifelong learning, participative citizenship and social responsibility. It forms the basis of lifelong learning, common to all disciplines, learning environments and all levels of education. It enables the learner to master the contents and extend their investigations. It has a deep awareness, connection and fluency with the information environment. Information literate people are engaged, enabled, enriched and embodied by social, procedural and physical information that constitutes an information universe (Lloyd 2004 and Lupton 2004).

The need to be information literate is now more needful than before because the environment we live in is not only information driven, but also technology driven where information and information formats keeps changing. Although information is available everywhere but in an unprocessed state and needed to be filtered before it can be impactful. Fernandez-Villavicencio (2010) posited that even though information is everywhere these days, one of the most difficult challenges is to evaluate the information because there are thousands of channels with false and misleading information. Corroborating this, Okpala, Adomah, Sefu and Kalule (2014) and Anunobi and Udem (2015) opined that there is need for knowledge and strategies in order to utilise information maximally.

Although there are lots of literature on information literacy generally, but little has been written on information literacy services for postgraduate students (Rempel and Davidson, 2008). This may be due to the assumption that postgraduate students are matured enough to know the appropriate use of information for research. On the other hand, Wavel (2009) reported that, postgraduate students are likely to have had a range of different experiences with information literacy skills in the undergraduate days considering the role of teachers in information literacy development, or in their workplace. Corroborating this, Rempel and Davidson (2008) stated that most lecturers also believed that postgraduate students are competent enough to embark on scholarly research without the need for skill in information literacy. They further stated that this assumption often cause a disservice to the students and create challenges for librarians in their bid to offer information literacy services for the postgraduate students.

Previous studies have also confirmed that many postgraduate students do not have the sufficient skills for the level of academic research required of them (Donaldson, 2004, Streatfield, Allen and Wilson 2010, Anunobi and Udem, 2015). Rempel and Davidson (2010) also discovered from their study that graduate students were not familiar with web 2.0 tools and other social bookmarking sites and were not using it for keeping up with literature, stressing the need for information literacy (IL) for postgraduate students and researchers, Streatfield, Allen and Wilson (2010) stated that this is necessary because of changes occurring rapidly in information technology. It is also believed that information literacy skills cannot be acquired in a one-time lecture or training.

Dorvlo and Dadzie (2016) on the other hand observed that despite the fact that students of today have increasing access to computers and electronic media facilities they still need to develop skills that will help them to harness authoritative information. Iannuzzi (1998) addresses the connections between faculty development and information literacy and presents strategies for establishing partnerships listing five related topics: information literacy and campus culture, campus initiatives, strategies for partnerships, a faculty development model, and a university Model for Information Literacy.

Furthermore, Adam et.al. (2016) noted that one of the key roles played by libraries in the provision of information literacy training is the recognition that both digital and information literacy are important in learning, teaching and research and are therefore essential skills for students and staff. That is why libraries are now taking up the challenge of providing information literacy training for students and staff. Fernandez-Villavicencio (2010) however, opined that information literacy skills are required not just by students and learners but also by teachers, administrators, government policy-makers and business employers. One can therefore conclude that IL is required by everyone as lack of it will hamper effective survival in an information-driven society (Baro, 2010).

Karisiddappa (2004) and Pawinun and Kemparaju, (2004) recommended that information literacy (IL) and capacity building in form of education programs developed by libraries such as literacy campaign, functional literacy and library instruction should be integrated into school curriculum.

Maughan (2001), Wolf (2007) and Walsh (2009) all canvassed that librarians should assess, measure and evaluate the usefulness of information literacy skill as a concept using various methods such as quizzes, tests, questionnaires, analysis of bibliographies and self-assessment tools.

Methodology

The population of study comprised three hundred and fifty seven (357) postgraduate students from the seven colleges of the University running postgraduate programmes. These seven Colleges of the University running postgraduate programmes are: College of Agricultural Management and Rural Development (COLAMRUD, College of Animal Science and Livestock Production (COLANIM), College of Biosciences (COLBIOS), College of Environmental Resources' Management (COLERM), College of Food Science and Human Ecology (COLFHEC), College of Physical Sciences (COLPHYS) and College of Plant Science (COLPLANT).

Thirty-four (34) respondents were evenly selected across these colleges. The 34 participants were selected through a multi-stage sampling technique; Colleges> Departments>Research Areas. A self-designed questionnaire was the main data collection instrument for the survey. This was administered on the thirty-four (34) participants at the information literacy (IL) training. The data were collated and analysed using the Statistical Package for the Social Scientists (SPSS). The survey featured questions on a range of issues including:

(1) Aims and objectives of the Training

(2) Facilitators' performance

(3) Training outcome

(4) Participants' satisfaction with the topics or modules covered by the training

(5) Rating of the components of the training

Findings and Discussion

Data collected were collated, analysed in line with the research objectives and presented in this section.

Demographic Information

Programmes of study of the participants reported 23 (67.6%) respondents studying for Master's degree while 11 (32.4%) were doctoral students. Gender recorded 19 (55.9%) males and 15 (44.1%) female respondents. This shows that a higher percentage of the postgraduate students were registered for a degree of Masters than a Doctor of Philosophy degree. It can also be deduced that, there were more of males than female postgraduate students during the session of carrying out the research.

Respondents were selected across the colleges of the university running postgraduate programmes as shown on Table 1.

Table 1: Distribution of participants by Colleges

College	Frequency	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
COLAMRUD	1	2.4	2.9	2.9
COLANIM	10	24.4	29.4	32.4
COLBIOS	3	7.3	8.8	41.2
COLERM	3	7.3	8.8	50.0
COLFHEC	1	2.4	2.9	52.9
COLPHYS	5	12.2	14.7	67.6
COLPLANT	11	26.8	32.4	100.0
Total	**34**	**82.9**	**100.0**	

The data collected revealed that postgraduate students from only seven of the ten Colleges in the University participated in the training. This is due to the fact that College of Management Science (COLMAS) and College of Engineering Science (COLENG) do not offer courses at the postgraduate level as at the time of conducting the study, while the absence of students of the College of Veterinary Medicine (COLVET) was due to the peculiarities of their programme of study which usually runs parallel to the school's sessions. College of Plant Science (COLPLANT) had the highest number of participants (26.8%) followed by College of Animal Science and Livestock Production (COLANIM) which had 24.4% participants, while College of Agricultural Management and Rural Development (COLAMRUD and College of Food Science and Human Ecology (COLFHEC) both had one representative each.

The researchers sought to find out whether the aims and objectives of the training were met. To ascertain this, some questions were raised and responses were analysed and reported in Table 2.

Table 2: Aims and objectives of the Training

Items	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Total (%)
The training met my information needs	65.9	34.1	0	0	100.0
I was well informed about the objectives of the training	57.5	35.0	5.0	2.5	100.0
The training is ill-timing	13.2	5.3	44.7	36.8	100.0
The content is relevant to my research work	63.4	31.7	2.4	2.4	100.0
The content is not appropriately treated	9.8	0	46.3	43.9	100.0
The lectures are boring	0	0	56.1	43.9	100.0
There are many irrelevant topics	0	0	22.5	77.5	100.0
The training is long overdue	41.0	12.8	28.2	17.9	100.0

All the participants agreed that their information needs were met by the training; 65.7% of participants strongly agreed on this. A cumulative of 97.5% respondents indicated that they were well-informed of the objectives of the training while 7.5% revealed they were not. This however shows that more efforts need to be geared toward communicating the objectives of future trainings to the students so that subsequent participants will be able to appreciate the objectives of the training. Also, 63.2% of the participants disagreed that the training was ill-timing while 95.1% agreed that the contents of the training was relevant to their research work.

Participants were asked to indicate whether the contents of the training were not appropriately treated; 90.2% of them disagreed with the statement while all the participants (100%) disagreed that the lectures were boring. This indicated that all the participants enjoyed the lectures. Moreover, 53.8% of the participants agreed that the training was long overdue.

The researchers were also interested in knowing how the facilitators performed viz-a-viz the delivery of each module, hence the participants were asked to rate this (see Table 3).

Table 3: Facilitators' performance

Items	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Total (%)
Facilitators performed below expectations	0	0	39.0	61.0	100.0
Facilitators were not adequately prepared	0	2.4	43.9	53.7	100.0
Facilitators stimulated my learning about information sourcing	85.4	14.6	0	0	100.0

Table 3 reported the participants' rating of the training's facilitators. All participants indicated that the facilitators did not perform below expectation. This implies that the participants' were not disappointed with the facilitators' performance; 97.6% disagreed that the facilitators were not adequately prepared; therefore, facilitators were adjudged to be adequately prepared for the training

and all the training participants (100%) agreed that facilitators stimulated their interest of learning about information sourcing.

Another important issue agitating the minds of the researchers is to know whether the training met its purpose viz-a-viz the expected outcome and benefits to the students. Result of this is reported in Table 4.

Table 4: Training outcome

Items	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Total (%)
The objectives of the training were met	63.4	34.1	2.4	0	100.0
The training was a good way for me to learn about information sourcing	68.3	31.7	0	0	100.0
The training exposed me to a better way of doing research	53.7	41.5	4.9	0	100.0
Training activities gave me sufficient practice and feedback	29.3	61.0	9.8	0	100.0

All the participants (100%) agreed that the training was a good way for them to learn about information sourcing, while a cumulative of 95.1% agreed that the training exposed them to a better way of doing research and another cumulative of 90.2% of the participants agreed that the training activities gave them sufficient practice and feedback. This is because; the training was an interactive one which gave participants opportunity for a hands-on practice.

Table 5: Participants' satisfaction with topics or modules covered by the training

Items	Highly satisfied (%)	Average satisfied (%)	Not satisfied	Total (%)
Role of library in research	81.6	18.4	0	100.0
Using Basic MS Word	87.5	12.5	0	100.0
Literature review	70.0	30.0	0	100.0
Focus on Mendeley reference management software	89.2	10.8	0	100.0
Introduction to E-Resources	48.8	43.9	7.3	100.0
Citation and Referencing	59.0	41.0	0	100.0
Copyright and Plagiarism	79.5	17.9	2.6	100.0
Information sourcing, analysis and interpretation	77.5	22.5	0	100.0
Use of reference feature in MS Word	76.9	23.1	0	100.0

Training modules were thematic and structured around the different aspects of information literacy to which participants were asked to rate their levels of satisfaction; 89.2% were highly satisfied with the module on Mendeley Reference Management Software, 87.5% with using Basic MS Word, 81.6% were highly satisfied with the module on the role of library in research, 79.5% of the participants were highly satisfied with the module on copyright and plagiarism, 77.5% on information sourcing, analysis and interpretation, 76.9% were satisfied with the module on use of reference feature in MS Word, while 70% with the module on Literature review. Furthermore, information extracted from the data collected for the study revealed that 59% were highly satisfied with module on citation and referencing. However, only 48.8% were highly satisfied with the module on introduction to e-resources; this implies that, the module needs to be re-examined in order to stimulate the interest of the students in its usage; being pivotal to research.

Table 6: Rating of training components

Items	Average (%)	Good (%)	Excellent (%)	Total (%)
Content and agenda	6.9	34.5	58.6	100.0
Practical and activities	15.4	64.1	20.5	100.0
Facilitators	38.5	61.5	0	100.0
Time allotted to lectures	38.5	53.8	7.7	100.0
Assistance rendered to participants	8.1	48.6	43.2	100.0
Logistics and arrangement	10.3	53.8	35.9	100.0
Training venue	25.6	74.4	0	100.0
Tea breaks	37.8	32.4	29.7	100.0

According to the participants' rating, 74.4% rated the venue (the Postgraduate Hall of the University) used for the training as good, 64.1% indicated that the training's hands-on-practical was good, 61.5% agreed that the choice of facilitators were also appropriate, viz-a-viz the module delivered, while 58.6% indicated that the content and agenda of the training were excellent. It is therefore, clear that the pRrticipants had a good rating of the training components. Although, these components can be well-improved upon to record an excellent performance in the future.

Extracts from Responses to Open-Ended Questions

Participants were asked a few open-ended questions that bothered on the most valuable and least valuable aspects of the training; in which various responses extracted shows majority of them indicating that valuable aspects of the training was the information sourcing, analysis and interpretation module and the expertise of the facilitators in delivering the lectures on the different aspects of the training modules. However, none of them mentioned anything to be less valuable. Participants were also asked to comment generally on the training, giving advice on future ones; majority of the participants suggested that the training should come up at the beginning of all postgraduate programmes annually and should hold for more than one day. Other suggestions made was that all postgraduate students should be invited to participate in future trainings and not a selected few randomly picked from different colleges as was done in the maiden one. Other suggestions made also bothered on the need to make alternative source of internet access available so as to maximise the internet-based modules of the training.

The study revealed that the participants of the training have a good perception of the training as most of them agreed that the contents of the modules were relevant to their research and information needs. The facilitators also performed very well based on the respondents' assessment. However, they wished the training had run for more than a day and to have accommodated all postgraduate students of the university rather than the selected few. Hence, they suggested that the training should hold annually during the first year of the postgraduate programmes so that they will be able to apply the knowledge gained to their research.

Conclusion and Recommendations

From the foregoing, it can be concluded that, the training was a welcome development which the participants wished could continue. On the part of the organisers, findings of the study has contrasted the assumption that postgraduate students are mature students who are considered to be experts and expected to know how to find information unaided without necessarily assisting or training them on information literacy. The following suggestions emanating from the study are therefore proffered in order to adequately equip postgraduate students for lifelong learning and research:

1. There should be a teaching collaboration between faculty members and librarians where librarians would teach research skills to postgraduate students, while the former teach course contents. As a matter of fact, few departments of the University have sought collaborations with librarians by inviting them to teach the Information Literacy and Library Use aspect of Research Methods in their fields since after the Training.

2. The body (ies) responsible for censoring university education in different countries such as the National Universities' Commission (NUC) in Nigeria; should as a matter of urgency Integrate information literacy and library use into the curriculum of all postgraduate programmes; this can as well begin from the undergraduate level.

3. Faculty members and librarians should also collaboratively develop strategies for the implementation of information literacy programmes within participants' institutions.

4. Efforts should be geared towards maintaining a seamless synergy between research skills and course contents of postgraduate programmes.

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Rural Women's Comprehension of *Hablamos Juntos* Universal Symbols of Healthcare

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Abstract

Much research attention on Health Information Literacy (HIL) has been on textual sources of information with limited studies on understanding how individuals comprehend information presented in the non-textual forms. This paper presents the results of a study on rural women's comprehension of Hablamos Juntos (HJ) universal symbols of healthcare. The study was carried out in the Lake Zone regions of Tanzania. The survey results obtained suggest that majority of women had a low level of HJ symbols comprehension. The study's results on clinical and medical (CM) services symbols matching test partly confirm women's low level of comprehension observed in the survey. Overall, a total of 19 out of 32 CM symbols were not identified at all. In fact, the few symbols mostly comprehended by the women were those the respondents were familiar to. Taken together, these results seem to suggest that low comprehensibility of HJ clinical and medical symbols demonstrated by women in this study is partly due to low levels of education and symbols' traits particularly, familiarity, resemblance, and simplicity. These results can be used as baseline information in a survey for developing healthcare symbols in Tanzania.

Keywords: Health Symbols, Health Literacy, Symbols' Comprehension, Tanzania

Introduction

The use of symbols as a tool for communication is as old as human civilisations (Cowgill and Bolek, 2003). Throughout human history, from the early cave drawings to modern times, symbols have been used as communication tools across different societies (Dowse and Ehlers, 2004). Unlike signs, symbols are immaterial and abstract representations of thoughts in a subjective and interpretative manner. Symbols can either be conceptual or image-related. The symbols in the former form portray abstract images that do not have relationships with the subjects they represent while those taking the latter form are directly related to the referents they represent (Cowgill and Bolek, 2003). Image-related symbols may include pictorial signs such as the red cross and crescent symbols. Unlike with image-related symbols, users have to learn or be taught conceptual symbols to understand them. Nevertheless, when properly designed, symbols are the best communication tools they minimise the effects of differences in levels of literacies and cultural backgrounds (Bees and Mak, 2012). Symbols are the synthesis of a human's social and cultural environment (Ngangah, 2012) with a duo representation of something by itself and something that signifies meaning (Esposito and Pinto, 2015). These traits make symbols' interpretations partly influenced by different cultural, historical, and ideological factors.

In the medical domain, symbols are used in hospitals and other health facilities to provide information to patients and visitors. Healthcare

symbols provide warnings to patients and visitors and directions on how to navigate and access health services (Malhotra, and Somashekar, 2015; Mounika and Brundha, 2015). Between 2003 and 2010, the society for environmental graphic design (SEGD) in the USA developed symbols to be used in hospitals. The symbols came to be known as *Hablamos Juntos (HJ),* a Spanish phrase that means "*we speak together*" (Hablamos Juntos, 2010). The final set of HJ symbols comprises 54 healthcare symbols. The symbols are classified into three categories: clinical and medical (CM01-CM32) category, in which there are 32 symbols; facilities and administrative services (FA01-FA12) category, which has 12 symbols; and imaging (MA01-MA10) category, which has 10 symbols (Chih-Wei, Huey-Wen, and I-Ping, 2016). Essentially, HJ symbols were developed to assist non-English speaking users and visitors of health facilities in the USA. These symbols have eventually been adopted by many countries following a series of tests for their universal applicability.

Research Problem Statement

Symbols have been used as an effective communication tool that overcomes language barriers in health facilities (Dowse and Ehlers, 2004). Indeed, their potentials are renowned across different communities. However, despite conventional consensus on the universality of symbols, HJ symbols, like any other symbol, may be subjected to multiple interpretations across different communities. Thus, the conventional wisdom in Health Information Literacy (HIL) that conceptualises HIL as the ability to read, access, appraise, understand, and use a wide range of information sources for making informed decisions (Kassim and Ndumbaro, 2020) should be considering these symbols as an area of curiosity. To the contrary, evidence from extant studies (see, for instance, Egunjobi, 2014; Ekoko, 2020; Eriksson-Backa, Ek, Niemela, and Huotari, 2012; Hirvonen, Ek, Niemelä, Korpelainen, and Huotari, 2015; Noora Hirvonen et al., 2020; Meherali, Punjani, and Mevawala, 2020) demonstrates that the majority of research done on HIL has focused on textual sources of information and paid very limited attention to health information presented in graphical or abstract forms such as symbols.

Since people's interpretation and understanding of health symbols may partly be influenced by their cultural, historical, and ideological backgrounds (Dowse and Ehlers, 2004), HJ symbols' comprehensibility, particularly in developing countries like Tanzania, is an aspect that needs extensive testing. For this reason, the limited research (Benedicto and Tibategeza, 2021; Mdukula, 2018) focused on signage in public health institutions from a linguistic perspective in Tanzanian highlights the limited testing done to establish the applicability of symbols in the nation's health system. As such, this study, which was motivated by the need to explore rural women's comprehension of HJ "universal healthcare symbols" was carried out.

Purpose and objectives of the Study

As part of a series of studies on rural women's information health information literacy, the current study focuses on comprehension of medical and clinical service symbols. Overall, the study has explored rural women's comprehension of HJ Universal health symbols. Specifically, the study had two main objectives. The first was to explore how women of reproductive age comprehend HJ clinical and medical symbols while the second was to examine the influence of social demographic factors on women's understanding of HJ universal health symbols.

Related Literature

Symbols in Health Facilities and Hospitals Lack of literacy skills impedes access to information about health services (Cowgill and Bolek, 2003). This has an impact on effective use of healthcare services. As a way of limiting this effect, throughout the history of health service provision, symbols have been used to communicate health information across different health service consumers. These tools have been used to portray specific body parts such as the eye, ear, bone, or brain (Malhotra and Somashekar, 2015) or concepts such as red cross or crescent (Cowgill and Bolek, 2003).

Effective healthcare symbols can contribute to the improvement of health services provision and health outcomes (Cowgill and Bolek, 2003). This is made possible by the symbols' elimination of communication barriers in healthcare provision,

particularly among people with low literacy (Moriyamdae, Harnisch and Matsubara, 1994). In fact, these symbols can break language barriers in communication (Malhotra and Somashekar, 2015), create visual appeal, are universally applicable, and facilitate better memory retention (Malhotra and Somashekar, 2015). All these traits make these tools the best alternative communication method for service providers and health service consumers.

Comprehensibility and Universality of Healthcare Symbols

The term universal symbol is an abstract referent of something or an object that can be comprehended globally regardless of cultural differences. It is agreed among scholars that healthcare symbols guiding hospital visitors should be as universally comprehensible as possible (Lee, et al, 2016). Although there have been different efforts to develop universal healthcare symbols that can be used across different cultural contexts, little empirical evidence is available to testify their universality (Bless and Mak, 2012). Evidently, unlike in other professional and academic domains such as mathematics and musicology, the universality of symbols in the health domain still remains debatable.

Different attributes have been included in studying users' comprehension of symbols. These include familiarity and physical resemblance or semantic closeness, symbols' concreteness, or the extent to which symbols portray real objects and simplicity in terms of the least number of objects or details a symbol has (Blees and Mak, 2012). Studies have also established relationships between individuals' cultural backgrounds and differences in comprehension of healthcare symbols (Bless and Mak, 2012; Cowgill and Bolek, 2003). Cultural background plays a significant role in a person's perception of what a symbol means (Cowgill and Bolek, 2003). As such, for symbols to be effective in aiding health information communication, they must mirror the cultural values and traditions of potential users (Dowse and Ehlers, 2004). In this regard, a need to incorporate symbols that are locally relevant and easily understood by users is paramount (Dowse and Ehlers, 2004).

Blees and Mak (2012) investigated the comprehensibility of pictorial symbols with the intention of establishing if they are really culturally independent and how their interpretations differ across cultures. The results reported suggest that symbols' comprehension is influenced by semantic closeness, familiarity, meaningfulness, concreteness, and simplicity. Other than this aspect, studies have also focused on knowledge of health warning related signs and symbols among medical students (Mounika and Brundha 2016), the effectiveness of symbols used to present medical symptoms to health service consumers (Moriyamdae, Harnisch and Matsubara, 1994) and factors determining symbols' effective comprehensibility (Moriyamdae, Harnisch and Matsubara, 1994; Dowse and Ehlers, 2004). While Moriyamdae, Harnisch and Matsubara, (1994) identified symbols' simplicity as essential in their comprehensibility, Dowse and Ehlers (2004) noted that irrespective of simplicity, symbols are always likely to be misinterpreted.

A few researchers have examined the comprehensibility of HJ healthcare symbols (Lee *et al*, 2016; Chih-Wei, Huey-Wen, and I-Ping, 2016). For instance, Lee *et al* (2016) found variations in the comprehensibility of 14 HJ healthcare symbols across South Korea, Turkey, and the USA. Overall, the main finding of the study was the difference in levels of comprehension of various HJ symbols across individual countries (Lee *et al*, 2016). Symbols for billing, obstetrics clinic, emergency, surgery, and radiology appeared to be well understood cross-culturally while radiology and emergency symbols had the highest level of comprehension across all participant groups (Lee *et al,* 2016). When it came to conclusion, Lee *et al* (2016) were optimistic of the possibility of designing effective universal healthcare symbols that would be cross-culturally understood. On their part, Chih-Wei, Huey-Wen, and I-Ping (2016) conducted a survey to identify HJ healthcare symbols with lower identification and reasons for lower comprehension among health service users in Taiwan. Differences in knowledge, experiences, culture, and level of education were found to influence how individuals interpret the symbols. Overall, only 12 out of 50 HJ symbols were correctly comprehended.

Materials and Methods

Study Area and Study Population

This study was part of a series of studies on Health Information Literacy among women of reproductive age in the rural Lake Zone Regions of Tanzania. The study was carried out in four villages of Iselamagazi, Igaganulwa, Kwibara and Kanazi located in Shinyanga, Simiyu, Mara and Kagera regions respectively. Data collection involved a questionnaire survey and focus group discussions. A total of 349 women of ages between 15 to 49 years participated in the study. These women were purposively preferred for being in their reproductive ages and conveniently selected based on their availability and willingness to participate in the survey. Specifically, 78 women were selected from Iselamaganzi village, 91 were from Igaganulwa, 90 were from Kwibara and 90 women were from Kanazi. Out of these women, 72 were randomly selected to participate in focus group discussions. To do so, a stratified sampling method was used to stratify the surveyed women into three categories based on differences in age, level of education, and distance from health facilities. These factors were considered important in people's comprehension of symbols. A total of eight focus group discussion sessions, two in each village, were conducted. The number of participants in the groups ranged from 8 to 10 women.

Data Collection and Analysis

Health Literacy Instrument for Adult (HELIA) questionnaire was adopted for data collection. While HELIA comprises five sets of HIL attributes: reading, accessing, understanding, appraising, and using, only results on the attribute of understanding were included in this study. Precisely, one aspect of understanding namely "understanding signs and symbols" was used to test women's comprehension HJ symbols. During focus group discussions, a matching test method was conducted. A template containing 32 HJ clinical and medical services symbols (see figure 1) was presented to the women for them to identify correct referents. The participants were asked to identify referents for each symbol and write their responses in either English or Kiswahili language. At the end of the data collection exercise, data from HIL survey were quantitatively analysed. This involved the organisation and comparison of the referents respondents connected to symbols with the actual clinical and medical services (CMSs) signified referents as indicated by HJ symbols CM1 to CM32. The level of comprehension was rated from 0 to 5 as indicated in table 1.

Table 1: Comprehension score summary

Comprehension Score	Descriptions
0	No description at all
1	The description provided is absolutely not related to the referent
2	The description provided indirectly relates with the referent
3	The description provided captures some minor aspect(s) of the referent
4	The description provided captures some major aspect(s) of the referent
5	The response completely relates with the intended referent

Sources: Adopted from, Campbell, Hoffmeister, Kiefer, Selke, Green, and Richman (2004).

Figure 1: Clinical and Medical Services HJ Symbols

Sources: Hablamos Juntos, 2010

Research Ethics

The project applied for and obtained an ethical certificate from the Tanzania National Institute for Medical Research (NIMR). Research clearance was also granted by the respective authorities in the four studied regions and districts. Informed consent was obtained from respondents and participation in the study was voluntary with no financial inducements. Precautions were taken to ensure that sharing of research results with participants and stakeholders does not compromise respondents' privacy, confidentiality, and anonymity. Additionally, confidentiality and anonymity were highly observed in other stages of the study.

Results

Demographic Characteristics

Participants' demographic characteristics (see Table 2) indicate that the mean age of participants was 31.5 years, thus suggesting a generally youthful population. The data obtained also show that a significant number of all study participants (> 50%) had attained a primary level of education while very few (< 5%) attained university level of education. Nearly all the participants (> 90%) resided near health facilities hence more likely to utilize the facilities than those residing far away.

Table 2: Respondents' demographic characteristics (n=349)

Age groups (mean age 31.5)	Number	Percent
15 – 19	38	10.9
20 – 24	78	22.3
25 – 29	15	4.3
30 – 34	72	20.6
35 – 39	53	15.2
40 – 44	75	21.5
45 – 49	18	5.2
Education	**Number**	**Percent**
Non-formal education	25	7.2
Primary education	220	63.0
Primary school dropout	13	3.7
Secondary school dropout	16	4.6
Secondary school O-Level	56	16.0
Secondary school A-Level	5	1.4
Vocational or technical graduate	3	0.9
University graduate	11	3.2
Distance to the health facilities	**Number**	**Percent**
0 to 1km	32	9.2
2 to 3km	173	49.5
4 to 5km	143	41.0
6 to 10 km	1	0.3

Women's Understanding of Healthcare Symbols

Women's understanding of different healthcare symbols found in local hospitals and health facilities was tested. The results presented here are based on women's self-reporting. Overall, most of the women in the studied communities had problems in understanding different healthcare symbols. The findings suggest that >70% of the study participants had inadequate levels of understanding as shown in Table 3:

Table 3: Women Aggregated levels of symbol comprehension, (n=349)

Aggregated Level of comprehension	Number	Percent	HELIA scores
Inadequate	245	70.2	0.0–50.0
Problematic	78	22.3	50.1–66.0
Sufficient	25	7.16	66.1–84.0
Excellent	1	0.28	84.0–100

Influence of Respondents' Demographic Characteristics on Symbol Comprehension

Respondents' demographic characteristics were tested to find out if they had any influence on their comprehension of symbols locally found in the country. A chi-square test was performed for that purpose (see Table 4).

Table 4: Influence of respondents' demographic characteristics on HJ symbol comprehension (n=349)

Variable	Chi-square	d.f	Significance
Age group	12.203	18	0.837
Education	117.313	21	0.000
Distance to health facility	12.522	9	0.185

Results indicate that while the variable of study participants' levels of education has been found statistically significant at less than 5%, there is an insignificant association between participants' ages and distance to health facilities with their levels of symbols comprehension. As such, education appears to be the primary determinant of women's comprehension of symbols.

Results of the Symbol Matching Test

Comprehension of the Clinical Medical (CM) Services Symbols

Thirty-two HJ symbols on Clinical and Medical (CM) services were presented to study participants and the analysis from the symbol matching test shows that only the Ophthalmology symbol (CM15) was accurately identified by all study participants. The responses given on CM15 exactly matched the intended referent of the symbol thus suggesting the highest level of comprehension. In the other category, 12 of the HJ symbols (*See Figure 2* and *Table 5*) were partially comprehended. The other 19 HJ symbols were excluded from the web.

Figure 2: Fully and partially comprehended clinical and medical services HJ symbols

Results of the symbol matching test further show that out of the 12 partially comprehended symbols, three; labor and delivery services, dental services, and laboratory symbols were adequately comprehended with a score of 4 *(Figure 2)*. The scores suggest that participants missed some minor informational elements of the intended meanings of the symbols. Inadequate comprehension of the HJ symbols was also observed on symbols representing health services, family practice, women's health, and anesthesia (See Figure 2). These symbols have scored 2 thus suggesting that the participants' responses did not match the intended meaning of symbols as they captured only minor information elements in the symbols. In contrast, the remaining 19 symbols were not comprehended at all since no descriptions were provided. These included CM03 care staff area; CM05 outpatient; CM06 pharmacy; CM07 diabetes education; CM09 immunizations; CM10 nutrition; CM11 alternative/complementary; CM14 oncology; CM16 mental health; CM17 neurology; and CM18 dermatology. The other symbols were CM19 ear, nose and throat; CM20 respiratory; CM21 internal medicine; CM22 kidney; CM27 genetics; CM28 infectious diseases; CM31 surgery; and CM32 physical therapy. Further results on the 12 symbols that respondents fully or partially comprehended are presented in Table 5. One notable aspect of the results is that multiple referents were provided.

Table 5. Comparison of referents in partially comprehended HJ symbols

HJ symbols	Referents	Comprehended referents
	Health services	• Emergency service • Church • Ambulance • Pharmacy
	Intensive Care	• Drip infusion • Treatment • Labour and delivery • A bed • ICU • Patient ward
	In patient	• A nurse and a patient • Sick person • A nurse in night shift
	Family practice	• Family doctor • Counselling service • Family planning • A family • A church congregation • Consultation room
	Laboratory	• Laboratory • Microscope • Injection room
	Pathology	• Laboratory • Microscope

	Cardiology	• Heart • Love • Heartbeat • Uterus • Radiation
	Woman's health	• Good health • Health service provider • Mosque • A nurse • First aid
	Labor and delivery	• Pregnant woman • Labor room • Antenatal care
	Pediatrics	• Child medical care • A baby • Infants' clinic • Baby first aid
	Dental services	• Dental Services • Mouth and teeth • Teeth • Cervix
	Anaesthesia	• Ventilator • Oxygen • ICU

Participants were able to capture some of the intended meanings of the symbols representing cardiology and pediatric services but missed key informational elements from these symbols. Generally, the results (as indicated in Table 5) show major deviations in some of HJ symbols' comprehension. For instance, the women have associated the cardiology symbol with heart, love, heartbeat, uterus, and radiation. Apart from that, the women have associated the pediatric symbol (see Figure 3) with child medical care, a baby, an infants' clinic, and baby care.
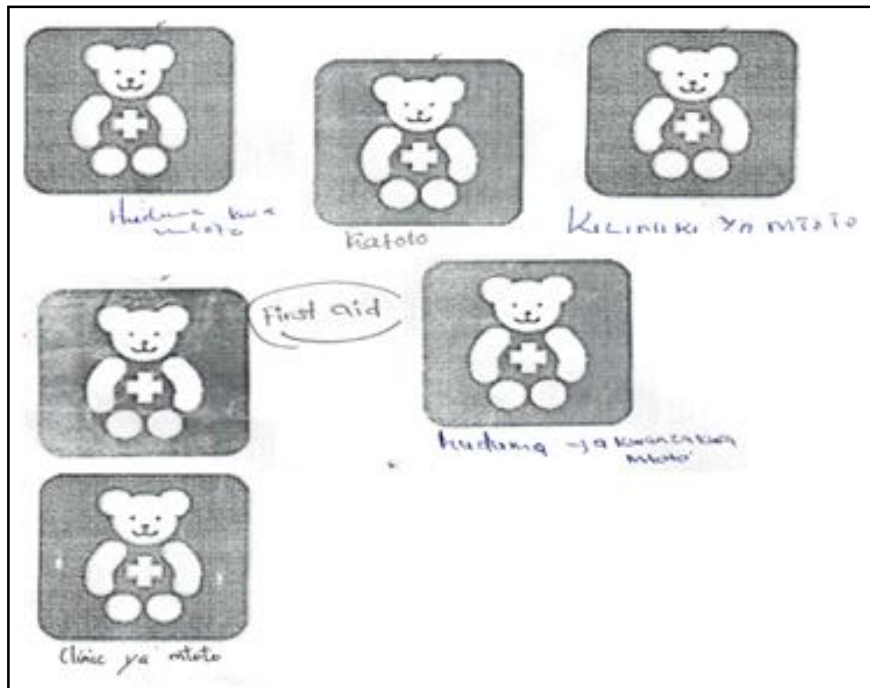
Figure 3: CM26 Pediatric symbol as perceived by study participants

The results also show that the CM1 symbol (health services symbol) has been associated with emergency services, a church, an ambulance and pharmaceutical services. In contrast, the CM 8 - family practice *(see Figure 4)* symbol has, in some cases, been associated with services related to family doctor, counselling and family planning. However, the same symbol was referred to as a family, a church congregation, and a consultation room.
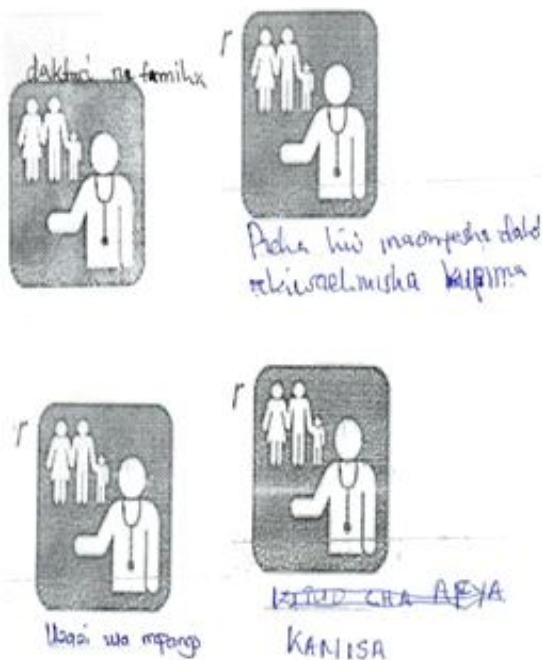
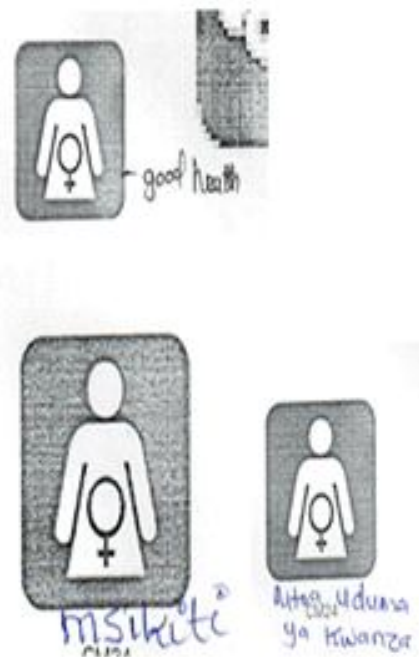**Figures 4: CM8 Family Practice**

Figure 5: CM24 Women's Health

Different deviations were also noted in the comprehension of CM 24 - women's health symbol (see Figure 5). Referents such as "a sign of good health", "health service provider", "a mosque", "a picture of a nurse", and "first aid" were associated with this symbol by respondents. A symbol representing anesthesia, on the other hand, was associated with a ventilator, oxygen, and a patient in ICU. Similarly, a significant deviation was noted in the meanings women associate with the HJ symbols that represent intensive care, inpatient, and pathology. Although the information provided by the participants was somehow relevant, it did not match the intended meaning of these symbols. The participants, for instance, have associated a symbol representing intensive care with drip infusion, treatment, labor and delivery, a hospital bed, patient ward and intensive care unit (ICU). The latter is the one more closely related to the intended referent. Likewise, a symbol representing inpatient has been associated with a symbol representing a nurse and a patient, a sick person, and a nurse on a night shift while a symbol representing pathology was identified as one representing a laboratory and a microscope.

Discussion

The development of healthcare symbols is an attempt to remove language and other communication barriers by translating medical jargons commonly used by medical practitioners into simple common language understood by health service consumers. However, the effectiveness of such efforts can be undermined by various factors. With such an understanding, this study has explored how women of reproductive age in rural settings comprehend HJ universal clinical and medical healthcare symbols. The study's aggregated results on the comprehension of the symbols show that majority of women had low levels of symbol comprehension. The results on clinical and medical (CM) services symbols matching test partly confirm women's low level of comprehension observed in the survey. Besides women's levels of education, symbols with minimal association with local contexts were more unlikely to be comprehended by women. This is also confirmed by Mayer and Villaire (2007), who noted that symbols with minimal references to local culture are hard to comprehend.

Further, the results on the association between women's demographic characteristics and their levels of comprehension of the HJ symbols have shown a statistically significant association between women's education and their level of symbol comprehension. As such, the findings suggest that women with lower levels of education are less likely to accurately interpret HJ symbols than those with higher levels of education. These results are consistent with those of other prior studies (Joy Lo, Yien, and Chen, 2016; King *et al*, 2012) and thus suggesting that education is paramount in the comprehension of HJ symbols. Although carried out in different domains, previous studies have associated the level of symbols comprehension with people's ages, where one's level of symbol comprehension has been reported to decrease with age (Beaufils et al, 2014; Lesch, 2003;). In contrast, the findings of this study has found no association between age and level of symbol comprehension. However, the difference in this study's findings from those of previous ones can be attributed to the study's targeting of participants of a particular age, meaning that there were no older women that would have added a different perspective to the findings.

Similarly, the study has found an insignificant association between the distance one covers to get to health facilities and their comprehension of HJ symbols. This was an unexpected result considering the presence of enough evidence (see, for instance, Hanson *et al*, 2017; Lohela, Campbell, and Gabrysch, 2012; Quattrochi, *et al*, 2020) that shows how short distances to health facilities promote effective utilization of these facilities by women; a state that was assumed to enhance the comprehension of symbols. In other words, it was expected that since most of the participants resided close to health facilities, their comprehension of the health symbols used in these facilities would benefit from this proximity. It can thus, be concluded that distance to health facilities alone cannot enhance women's level of comprehension of the HJ symbols.

Consistent with some previous studies (Mounika and Brundha, 2016; Blees and Mak, 2012; Cowgill and Bolek, 2003) this study has found that factors such as symbols' traits like familiarity and semantic closeness are associated with high level of comprehension. Healthcare symbols such as an eye which represents the eye's diagnosis and treatment

services, laboratory services, dental services, labor, and delivery services were easily understood by participants. This suggests that familiarity with and physical resemblance of some symbols enhance their comprehension. However, familiarity with some symbols has appeared to be somewhat a factor contributing to multiple their comprehensions. For instance, CM 1 Health services, CM 23 Cardiology and CM 26 Pediatrics, which are widely used in different contexts have attracted multiple referents in this study *(See table 2)*. This is partly due to the fact that these symbols have multiple uses within the same local context.

The results of the current study have partly confirmed the observation made by Blees and Mak (2012) and Dowse and Ehlers (2004) that a symbol's simplicity (i.e. inclusion of minimum objects) enhances its comprehension by users. While some symbols with few objects were easily understood, others with similar characteristics were partly or not comprehended at all. This is related to Dowse and Ehlers's (2004) conclusion that irrespective of their uncomplicatedness, symbols are always subject to misinterpretations. Just like a parable of "six blind men and an elephant" it is worth noting that instead of collectively focusing on all objects within a symbol, women's comprehensions were influenced by the power of perspective. Symbols representing intensive care with objects such as a drip, a bed, a person, and a bedside monitor attracted multiple interpretations. Further, women had a hard time comprehending symbols that look alike such as pathology and laboratory as well as intensive care unit and inpatient symbols. The association of family practice symbol with family planning could be attributed to beliefs among many African societies that associate family planning practices with having a small family as opposed to regular birth intervals.

Limitations of the Study

It is plausible that this study was faced with two limitations. The first is that although there are three sets of HJ symbols, the study has used only one set of 32 clinical and medical symbols to explore these tools' comprehension among rural women of reproductive age using symbols. The other two sets of symbols, namely facilities and administrative services symbols, and imaging were deliberately excluded from the study. This was majorly done because the symbols in categories two and three are not related to medical facilities and services available in rural areas of Tanzania. Nevertheless, this decision limits the study's applicability to other settings. The second limitation was the limited presence of previous studies related to health symbols comprehension. This limited the availability of literature specific to health signs and symbols. In addition to being a limitation to the study, this was also a clear indication of the research gap that this study sought to address. In all, these limitations form the basis for future research.

Conclusion

The current study contributes new insights on the comprehension of HJ universal health symbols. The results of the study indicate that the studied women faced a hard time understanding what HJ symbols represent since 19 out of 32 clinical and medical symbols were not comprehended at all. In addition to the fact that HJ symbols are yet to be implemented in the Tanzania health system, there is also evidence to suggest that some of these symbols are not common in the context in which the study was carried out. Generally, it can be concluded that the low comprehensibility of HJ clinical and medical symbols demonstrated by women involved in this study is partly due to their low levels of education and the symbols' traits, particularly their familiarity, resemblance, and simplicity.

Recommendations and Suggestions for Further Research

This section combines recommendations and suggestions based on the results presented and discussed in the previous sections. To facilitate easy comprehension, health symbols designers should emphasise simplicity and familiar characteristics. Apart from that, since this study has identified women's levels of education as a significant influencer of their ability to comprehend symbols this study also recommends increasing the overall literacy level of women in rural areas by strengthening campaigns to raise their overall level of education. This is expected to enhance the women's comprehension of various health symbols. Conceivably, results from the current study form a

baseline for taking steps towards designing and adopting national healthcare symbols. These symbols could be developed based on a national wide survey using HJ symbols as the framework of reference.

Furthermore, this study has contributed to new insights on studies of healthcare symbols. To further what has been done by the current study, a comprehensive comparative study involving different sections of communities using the three categories of HJ symbols is recommended. In the future, a study on traffic symbols and signs will be conducted using the same methodology but targeting motorcyclists. The rationale for replicating this study to a closely related context is to increase the possibility of generalizing the results to multiple contexts and circumstances.

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Personal Information Creation, Storage and Finding Behaviours of Faculty in Selected Universities in Ghana

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Abstract

The objectives of this study are to examine personal information creation and storage by faculty in selected universities in Ghana. The study also examined the factors associated with information finding/re-finding experiences of the faculty in their personal electronic and print information spaces and the influence of computer literacy in this regard. Data was collected from 235 faculty members of six universities in Ghana using a questionnaire. Faculty reported that they created personal information in an organised manner, and in comparison, with print, they created electronic information the most, and based on task at hand. Respondents strongly agreed that they found electronic information better when the information item is in a folder and has a content that relates to the folder name. They self-reported their computer literacy to be mainly intermediate level skill acquired mostly through workshops and personal efforts. The result shows a significant but marginal relationship between computer literacy and re-finding personal electronic information (df=1, B=0.238, p=0.001), but not finding/re-finding personal print information. Irrespective of demographic characteristics, strengthening computer literacy targeted at faculty will improve refinding of previously stored electronic information.

Keywords: Personal Information Management, Information Literacy, Computer Literacy, Information Re-Finding. Information Storage Re-Finding

Introduction

The major thrust of personal information management (PIM) is the concern about how people organise and keep the information they find useful, and how they find or re-find it when they need it. In the midst of this concern are a series of socio-technical and other issues that relate human behaviours to manage information that is kept for personal use. From the perspective of library and information science. Fourier's (2011) definition of PIM captures critical elements of interest in PIM:

> *…organising information so that it can be found again, metadata and tagging, choice of software, information literacy skills (e.g., identifying information needs, selecting appropriate sources to search, evaluating information, analysing and synthesising information), and putting information to use (Fourier 2011:550).*

How and where to keep information, whether on electronic devices, bookshelves or in the memory, and the socio-psychological issues that are involved in this activity are key in PIM concerns (Barreau

and Nardi 1995; Boardman and Sasse 2004; Jones 2007b; Jones 2007). These issues have occupied the interest of many researchers in different disciplines and aspects of human endeavour at different times.

Faculties are engaged in an information-dependent profession with high demands on performance and accountability. Faculty are avid creators and users of information; but there is evidence that, like many other professionals, they do not always discover the information they have stored when they need to meet their professional needs (Jones 2007; Eid 2014). Ideally, a well-managed information space provides faculty with pertinent information when they need it, thereby increasing their efficiency and efficacy and conceivably improving teaching quality. Sometimes the necessary information might not be found or might be found too late to be useful. At other times, faculty have access to information that is not of immediate use, and this useful information may be misplaced or forgotten before opportunities for their use and application arrive (Alman, Frey, Kearns and Tomer 2014). Also, faculty might be seeking for the information they need in the wrong place. The information is sometimes locked up in devices such as smart phones, PDAs, computers or other (Alman *et al* 2014). The information may be located on devices that are elsewhere or saved with a non-heuristic name or locked in an application, or in the wrong location, or a pass-worded location. Given the ubiquity of information in the electronic era, it might take less pain to create information, but it may be herculean to successfully locate it in the future for use.

Evidently the size of faculty personal information collection in print personal information spaces are often growing. Faculty living in low- and middle-income countries such as Ghana may have challenges managing their personal information; they are compelled by low level of automation to keep a large volume of print documents, in addition to electronic ones. Administrative chores, students' records, and official communications within and outside the universities, and others, are still mainly available on print versions. At the same time, faculty are compelled by the inevitable roles of modern information technologies to generate electronic information items which they store for use in the future. Struggling to keep and identify these information materials when needed will pose some challenges; electronic sources sometimes require some advanced knowledge of computer use while print sources will continue to consume spaces. Beyond computer skill and spaces, information literacy requirements for efficient management of personal information are ever expanding –existing software such as MS Windows are incorporating personal information management modules and new independent software are being produced regularly. These compete for the limited time of the faculty. Yet the tendency to generate and store information for possible future use cannot be bridled in the face of the avalanche of information which faculty discover from various parts of the world on daily basis.

The objectives of this study are to examine personal information creation by faculty in selected universities in Ghana, and the differences in storage of personal information in digital and print media. The study also examined the factors associated with information finding/re-finding experiences of faculty in their personal electronic and print information spaces. The study also examined the relationship between computer literacy level of faculty in Ghana and their information finding/re-finding experiences.

Literature Review

Personal Information Management

Personal information management has been defined as the processes and activities individuals employ to create, gather, store and retrieve information about the events and activities pertaining to their work function or for use at a later date (Jones 2007). Personal information is that information that can be considered belonging to or owned by an individual. What are the factors that individualise information and make them mine or yours, his or hers, or theirs or ours? Jones (2008) addressed this question. Information can be considered *mine* or personal because it is owned by *me*, for example the documents I created in my personal computer or the content of my portable phone(Campbell, Maglio, Cozzi and Dom 2004; Zhou *et al* 201). Information could also be mine because it is about me, for instance, my medical records or my employment records. Information that is directed towards me can also be described as mine; for instance, a survey

instrument sent to me. Information sent to me, experienced by me or relevant to me, are all in one sense or the other considered as mine. Managing these various categories of information influences positively or negatively the way we live and how capable we are to meet our needs.

Individuals perform a range of activities in order to acquire, keep, organise, maintain and retrieve information from their personal information collection (PIC) (Otopah and Dadzie 2013). This involves the process of acquiring, keeping, organising, maintaining and retrieving information from one's personal information collection (PIC) for everyday use. Based on an individual's information need, a person acquires information from various information sources. This information may be used immediately or kept for use at a future date. This keeping function requires that the information is organised in an orderly manner in order to facilitate easy retrieval. The organisation of information materials requires some mental effort in terms of properly naming documents and keeping them in appropriate files and folders in order to facilitate the retrieval process. Once information is acquired, organised and maintained, the individual will easily retrieve information from his personal information collection. The processes applied in the management of personal information are crucial since these processes are subjective to the individual involved. Also, information must be retrieved at the right time, in the right quantity and in the right quality in order to be valuable to the individual.

Mostly, personal information is created for an immediate need and as such created in a rush which often results in vague and ambiguous meanings and names (Lutters *et al* 2002 and Zhou *et al* 2012). For instance, an individual may create a document on a desktop and tag it with a name which may not really reflect the content of the document. Personal information materials are created very often and are considered ephemeral since they do not have a lasting or permanent storage. Barreau and Nardi (1995) mention that, ephemerals are information documents that have short shelf life such as 'to do' lists, note pads, memos, calendars, and news articles downloaded from databases as compared to archived information which is information that has a shelf life of months or years which may not be directly related to the current work of the individual.

PIM and Information Creation, Information Storing/Keeping and Information Refinding

Information Creation

Information creation focuses on how and why people are socialised to create information in various contexts in everyday life or in the working world (Trace 2007). The processes of information creation have shifted from the use of traditional tools and ways such as relying solely on books and other print information sources to the use of more sophisticated tools and methods such as the use of the internet. Nwezeh (2010) mentions that this change in the processes of information creation has been engineered by the ICT revolution which has brought about a wide range of sources from which information can be obtained.

Jefferies and Hussain (1998:359) found that in this Internet age, channels of obtaining information are a mixture of modern and traditional ways as well as formal and informal methods. Faculty members are now able to obtain a wide range of information from the Internet, most especially the World Wide Web (WWW) other than their reliance on print information sources most of which were chained to tables in the monumental libraries of the past. Faculties perceive that the Web provides current information which neither they nor their students can afford to omit or ignore; hence their increased use of information on the internet (Jefferies and Hussain 1998:359).

In creating information, faculty collect information from a wide range of sources; from print sources such as textbooks to the use of electronic sources such as educational digital libraries, search engines, listservs, databases, discussion forums, blogs and wikis (Diekema and Olsen 2014). Faculties also patronise open access information for the creation of their information for teaching and research purposes. In creating study content, faculties are able to produce and edit multimedia communication related material, as well as to provide virtual worlds for an increasing variety of collaborative learning environments (Jefferies and Hussain 1998). Nwezeh (2010) revealed that majority of academic staff in Nigeria use the Internet regularly to access content for their teaching and research purposes due to the enormous amount of resources available on the Internet.

Information Storage

Once an individual comes across a piece of information, its relevance is assessed, and the information stored appropriately for immediate use or stored to be used in the future. The information is organised and usually stored or kept appropriately to allow for easy retrieval or re-finding at a later date. Enakrire and Baro (2011) suggest that information is a resource that requires careful handling so that the right type of information gets to the right user at the right time and at minimum cost. (Fridman 2016) mentions that storing/keeping looks at the processes employed in keeping information for easy retrieval and re-finding at a later date. To store information, one must first of all decide whether the information at hand should be saved in the first place and then looks out for ways to store it so that the individual can remember they stored it, know why they stored it, and what it was that was stored (Fridman 2016). Information storage practices range between the use of traditional storages processes and devices to the use of electronic storage devices.

Information storage involves the process of keeping information to be used at a later date (Bergman 2013). Storage processes employed by individuals can influence PIM positively or negatively. Bergman (2013)identifies redundancy as a factor that can hinder the storage behaviour. Redundancy occurs in situations where previous versions of the same documents are kept. This mostly occurs when documents are updated but older versions are not deleted from the computer. This later creates problem when the current version of the document is being retrieved. Redundancy also occurs when the same information is stored on different computers for instance at home and at work. Finally, overestimating the need for files and information in the future and not actively deleting files that are no longer relevant from one's PIC may lead to redundancy.

In storing information, Enakrire and Baro (2011) identified different storage devices, mentioning primary storage devices such as a computer's main memory (RAM) which is volatile and the secondary storage device such as magnetic tapes, magnetic disks, among others. Electronic storage devices are becoming substitutes for traditional ways of storing information such that people do not only store information on secondary storage devices but also on external devices such as pen-drives, memory card, external hard drives among others which are easy to move about.

A study by Franco and Mariano (2014) concluded that when information is not stored in a single place or on a single device, it makes retrieval difficult since the information is split in several locations. This situation is also confirmed by Bergman (2013) in a study which revealed that individuals had several versions of their information on different devices (such as keeping a version of the same information on an office computer and another version on a computer at home) resulting in redundancy thereby making it difficult for the individual to retrieve information quickly.

Information Re-Finding

Information re-finding is the process of locating and retrieving information one has deliberately kept in his/her personal information collection (Özmen 2015; Bergman 2013).The abundance of information today has shifted the monetary cost of information from its accessibility to its retrieval. The amount of attention and time required to store and retrieve information is the price one pays for the information (Özmen 2015). The cost of information increases with the time and effort spent in retrieving the information. When information is properly organised and stored, it takes relatively less time and effort to retrieve. A user's time spent in organising information for storage determines which information is retrieved and how much of it is processed. Bergman (2013:467) mentions that the more time an individual spends in organising his/her information for storage, the less time he/she will require in retrieving that information at a later date.

Özmen (2015) believes that there is a link between the attention an individual pays in organising their information for storage and its retrieval. Özmen calls this cognitive psychology. In the same vein, Bergman (2013) mentions the positive effect of cognitive effort used in the organisation of information on information retrieval. To him, an individual who spends time and cognitive effort to keep his personal information is "ordered" while one who does not spend some time in organising his information as "disordered." To be ordered, an individual will have

to spent time giving meaningful names to their information materials so as to reflect the true content of the information. Doing so, one avoids the use of redundant names which may have no bearing with the content of the information material. A study by Bergman (2013:467) revealed that the use of meaningful names has an influence on retrieval time such that if meaningful names are used, retrieval time is minimal. Various retrieval methods are applied by individuals during the retrieval process. In an experiment to support the information seeking and retrieval need of graduate students in two major Taiwanese Universities, Wu (2011) identified various information retrieval procedures applied by the students.

The use of the keyword search method is the primary information retrieval mechanism. The use of the keyword search in retrieving documents requires the individual to enter keywords that represent the information being sought. This at most could be the name used in naming the folder or file. An individual who spends time ordering his files and folders before storage will be able to retrieve his information quickly as compared to an individual who did not. One who does not organise his information properly will have to keep modifying the search query and keyword until the information material is located thereby increasing the time spent in retrieving the information and increasing the cost of the information as well (Wu 2011). Also, Elsweiler *et al* (2007) mentions the browse-based system of information retrieval which enables the individual to look through information objects to find the objects they want. "Browsing systems either show users all the objects available, limiting the approach to relatively small data sets, or force a classification on the objects such as colour distribution for images."

Finding/re-finding identifies the lookup task, item task and multi-item task that need to be applied to locate information and also mentions direct access, browsing and hybrid retrieval options to be carried out for the retrieval of information once it is stored in the Personal Space of Information. Lastly, information retrieval deals with the processes through which the information retrieved from the PIC is distributed. From this theory, the strategies employed by faculty members in the management of their digital and paper-based information will be assess-based using storing/keeping, organisation and maintenance and finding/re-finding and information dissemination as the independent variables.

Challenges of PIM

Researchers have over the years identified a number of challenges with PIM. Elsweiler *et al* (2007:926) mentions the challenges of PIM to include problems of psychology, problems with classification, recognition and recollection. Cognitive difficulty in classification is the difficulty of deciding how to classify something which can be an important barrier to filing the information, hence individuals will prefer to pile their information rather than organise them into files (Malone 1983; Elsweiler et al 2007). This difficulty often leads to the use of meaningless, and idiosyncratic names. Idiosyncratic names are not meaningless names but are names that are most often only understood by the owner of the information and not easilyunderstood by an external observer (Bergman 2013). The use of meaningless names, however, requires more energy and cognitive effort and slows down the retrieval process.

Also, a poor recollection of contents or keywords of files and folders stored over time as one's PIC content increases in scope and complexity creates problems for information retrieval (Fuller, Kelly and Jones 1945). Fuller mentions the three memory problems people experience as transience, absent-mindedness and blocking. To him, transience is the gradual loss of memory which occurs over time. For instance, being unable to accurately recollect the details of your 17th birthday celebrations. Absent-mindedness, which is the condition of being so lost in solitary thought as to be unaware of one's surroundings. To him, "this becomes a sin when one is unable to direct attention to the things that will be needed to be remembered later, or if one encoded relevant things on a level that is too shallow for long-term retention." Mentioning for example; "daydreaming in lectures, not paying attention to where one puts one's keys." Finally, "blocking, which is failure to retrieve or access deeply encoded information when one's memories are temporarily unavailable."

Methodology

This paper is the third in a series developed from a completed thesis titled "Personal information management behaviour of faculty in higher education institutions in Ghana" submitted to the University of South Africa, Pretoria. The detail of the research methods has been presented in the thesis as well as in a previous paper from the thesis (Donkor and Nwagwu, 2019). It is necessary, however, to inform that a sample survey research design guided the research and quantitative data were collected from 235 faculty members of six universities in Ghana. Qualitative data was collected using an interview schedule from 18 willing faculty members. The universities were University of Ghana Lagon; Kwame Nkrumah University of Science, and Technology, Kumasi; University of Education, Winneba; University of Professional Studies, Accra; Valley View University and Central University College.

The respondents were selected by accidental sampling. The researcher visited the institutions and solicited for the participation of any faculty members that were available, and the instrument was administered to them. Although the sampling technique did not give faculty population in the six universities equal chances of participating in the study, the sample size of 235 that returned the questionnaire could be considered large enough for statistical inferencing. This report contains only aspects of the quantitative and qualitative data that addressed size of PIM collection of faculty, re-finding information in their electronic and print information spaces, computer literacy, perceived challenges of PIM and their self-assessment of their computer literacy with respect to PIM. The dependent and independent variables in this study are nominal in their forms. Using the Recode command in SPSS, the individual categories were converted to dichotomous forms, thus permitting inferential analysis.

Results

Information Creation

The first issue addressed in this paper is the faculty perception of the way and manner in which they created personal information. The paper also examined whether the information created is for tasks at hand, ephemeral/temporary, information that has archival value or information that is required for a task at hand.

Figure 1 shows that a little less than half of the respondents 111(47.2%) reported that they created their information in an organized manner, while far less than this number 42 (17.9%) created their personal information in a somewhat organised
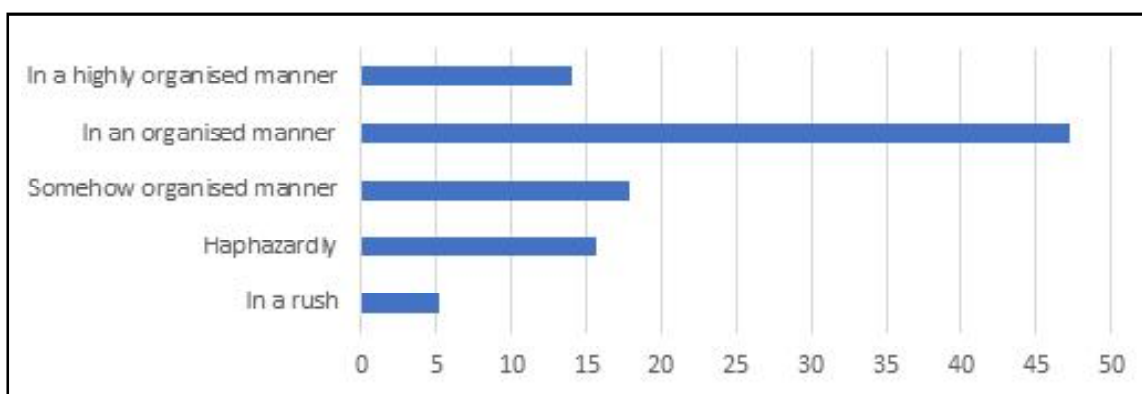

Figure 1:

manner. Those who created their information in a haphazard manner constituted 15.7% or 37 while those who considered themselves highly organised in their PIM creation were 33 (14%). Finally, 5.1% or 12 persons reported that they created their personal information in a rush.

Paired samples T-test was adopted to examine faculty perception about which type of information, print versus electronic, they create the most. The analysis shows a not significant (p=0.065) and negative correlation coefficient (-0.121). Table 1 shows a negative mean value as well as negative confidence intervals and t-value, supporting a significant difference in the frequency of use of the two media.

Table 1: Correlated t-test of the difference in print versus digital personal information creation

		Correlated samples Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Devia-tion	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Information is created mostly in print **vs** Information is created mostly in digital format	-1.33	2.070	0.135	-1.602	-1.070	-9.896	234	0.000

Table 2 shows that the mean of "Information is created mostly in digital format" (3.78) is higher than that of "Information is created/generated mostly in print" (2.45).

Table 2: Correlated Samples Statistics of print versus digital use in personal information creation

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Information is created mostly in print	2.447	235	1.502	0.098
	Information is created mostly in digital format	3.783	235	1.254	0.082

Table 3 relates to key reasons for faculty creation of personal information. The four variables are significant explanations for creating personal information but the highest mean refers to Information is created/collected based on a task at hand (4191), followed by information that is of

Table 3: Correlated samples t-test for reasons for creating personal information

	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Information is created/collected based on a task at hand	88.131	234	0.000	4.191	4.098	4.285
I create information that is of work value to me	52.622	234	0.000	3.698	3.559	3.833
I create information that is ephemeral or temporal in value	37.704	234	0.000	2.698	2.557	2.839
I create archival information	28.654	234	0.000	2.694	2.508	2.879

immediate value (3.698), while information that is of archival value and information that ephemeral in value has equal weight (2.698).

Finding/Re-Finding Information in Personal Print Information Spaces

When respondents were to state their experiences in retrieving print files, the responses of faculty to assertions about "Regarding spending minutes to find stored files", 38.9% strongly agreed with that experience while 20.6% merely agreed. Only 12.8% and 7.3% respectively disagreed and strongly disagreed with the experience while 20.4% were neutral. "On spending hours", 26.8% strongly agreed, 14.5% agreed, 15.7% were neutral while 28.1% and

14.9% respectively disagreed and strongly disagreed. Lesser number of people 21.5%) strongly agreed with "spending days to retrieve saved files", much lesser (6.4%) agreed and 132% were neutral. A rather large proportion 39.8% disagreed while 19.1% strongly disagreed. The response pattern changed in respect of "retrieving information items with ease" where only 9.4% strongly agreed and 10.4% agreed; 39.6 disagreed while 20.2 strongly disagreed.

Computer Literacy Skills

Figure 2 shows that majority 167(71.1%) of the respondents had intermediate computer literacy skills while 53(22.6%) had advanced computer literacy skills and 15(6.4%) were beginners.
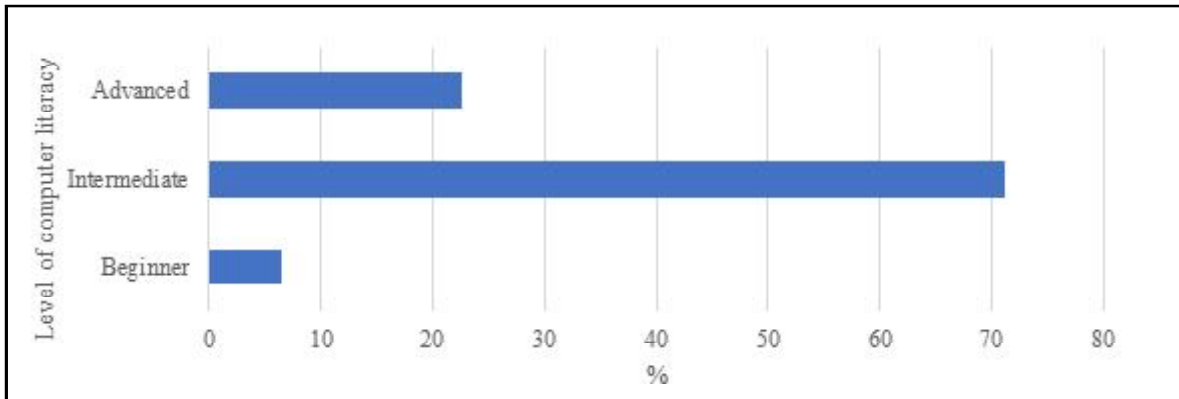

Figure 2: Self assessment of computer literacy

How computing skills were acquired

As evident in Table 5 majority of the respondents 96 (40.9%) acquired their computing skills from workshops/seminars/conferences, while 69 (29.4%) acquired their skills personally. Through formal education, 35 (14.9%) of the respondents acquired their computing skills.

Table 5: How computing skills were acquired

	Frequency	Percent
Workshops/seminars/conferences	96	40.9
Personally	69	29.4
Formal education	35	14.9
Formal education, workshops/seminars/conferences and personally	13	5.5
Workshops/seminars/conferences and personally	9	3.8
Formal education and personally	8	3.4
Formal education and workshops/seminars/conferences	5	2.1
Total	**235**	**100.0**

Thirteen (5.5%) acquired their computing skills through formal education, workshop/seminars/conferences and personally, 9 (3.8%) through workshops/seminars/conferences and personally while 5 (2.1%) acquired their computing skills through formal education and workshops/seminars/conferences.

Does Computer Literacy explain Finding/Re-Finding Information in Personal Electronic Information Spaces?

The relationship between computer literacy and finding/re-finding information in personal electronic information spaces by faculty was investigated. We computed up the 12 variables that guided data collection on finding/re-finding information in personal electronic information spaces to achieve a scale variable.

Table 6: ANOVA of computer literacy and finding/re-finding information in personal electronic information spaces

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression Residual Total	3.479 69.015 72.494	1 233 234	3.479 0.296	11.744	0.001[a]
a.	Predictors: (Constant), Level of computer literacy skills					
b.	Dependent Variable: Re-finding electronic information					

Table 6 shows that there is a significant variation between computer literacy and finding/re-finding information in personal electronic information spaces. The *F* statistic is 11.744, the distribution is *F* (1, 11.744), and the probability of observing a value that is greater than or equal to 11.44 is less than 0.001. There is strong evidence that B_1 is not equal to zero.

Table 7: Correlation Coefficients of the regression between computer literacy and finding/re-finding information in personal electronic information spaces

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.646	0.155		17.062	0.000
	Level of computer literacy skills	0.238	0.070	0.219	3.427	0.001
a.	Dependent Variable: Re-finding electronic information					

Table 7 shows that there is a significant relationship between level of computer literacy and finding/re-finding information in personal electronic information spaces (df=1, B=0.238, p=0.001).

Does Computer Literacy Explain Finding/Re-Finding Information in Personal Print Information Spaces?

In the ANOVA in table 8, the *F* statistic is 1.811. The distribution is *F* (1, 1.811), and the probability of a value greater than or equal to 1.811 is greater than 0.05. Therefore, there is very strong evidence that B is equal to zero.

Table 8: ANOVA of computer literacy explain finding/re-finding information in personal print information spaces

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.061	1	1.061	1.811	0.180
	Residual	136.505	233	0.586		
	Total	137.566	234			
a. Predictors: (Constant), Level of computer literacy skills						
b. Dependent Variable: Re-finding print information						

Table 9 shows that level of computer literacy does not explain finding/re-finding information in personal print information spaces by faculty.

Table 9: Coefficients of the regression between computer literacy and finding/re-finding information in personal print information spaces

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.294	0.218		10.516	0.000
	Level of computer literacy skills	0.132	0.098	0.088	1.346	0.180
a. Dependent Variable: Re-finding print information						

Table 9 shows that df=1, B=0.088, p=0.180), confirming that computer literacy does not predict finding/re-finding information in personal print information spaces by faculty.

Discussion of Findings

The objectives of this study are to examine personal information creation and storage by faculty in selected universities in Ghana. The study also examined the factors associated with information finding/re-finding experiences of the faculty in their personal electronic and print information spaces and the influence of computer literacy in this regard. Generating information is easy, particularly in the modern digital world. Keeping the information in such a way that it can be found is not as easy, but being able to find and re-find the information when it is needed is a more difficult task, and an old challenge. This study was designed to examine creation and storage of personal information in digital and print media. The study also examined information finding/re-finding experiences of the faculty as well as the relationship between computer literacy level and their information finding/re-finding experiences.

Many of the faculty create information in an organised manner; this is understood to mean that they take their time to identify, and search for a piece of information, and then take further time to confirm that the information item is exactly what they need before they save it. Some of the respondents corroborated this in their interviews:

'For instance, in conducting research, I search for information from Google scholar and seek for free articles. The information retrieved is stored in a folder for reading purposes. I prefer information in journals to books. I make use of keyword searches and Boolean operators when searching for information (Valley View University -VVU)'.

'Most of the information I create is based on decisions from committee meetings, policy documents among others. I also gather information is from the internet. Most of the information I create is in the form of papers, proposals, memos, minutes of meetings, etc. For my lecture notes, I search for information from the internet and also from textbooks (Kwame Nkrumah University of Science and Technology-KNUST)'.

'As part of my duties, I have a number of staff who assist me in the creation of information. Information is created as and when students request for them. For instance, student's records, transcripts and verification of certificates are done based on the needs of the institution with new additions added as and when necessary. I personally search for information for writing my articles and lectures. I use the Internet a lot in creating information (University of Professional Studies, Accra- UPSA)'.

'I create a lot of information to support my work as a lecturer. I do a lot of writing too and I use the Internet a lot. I search for information from the internet, textbooks and journals. I keep the information created on my desktop and sometimes on my laptop (UG)'. University of Ghana

These responses support that information creation is mainly deliberate and task-oriented, arising from researching, administrative responsibilities and teaching and other responsibilities. The analysis also shows that the information they create is predominantly digital in form. Without any doubts, the digital technology has made information creation *which* easier than before. These findings are in consonance with previous findings on PIM.

Faculty personal information was created mainly to address tasks that are at hand. They do not just engage on information search, but are guided by what they are currently doing. Evidently the task at hand could be work, and which may require ephemeral information, or require information that could be stored for future re-use. Faculty retrieve stores information much better when the information item in a certain folder has a content that relates to the folder name. Remembering an attribute of the file also helps in retrieving information that has been stored.

The interviews shed more light on the issues, highlighting how and where the files were usually saved:

'I make use of cloud computing in storing my information so that I can assess them wherever I am. I also have drop-box on all devices for the transfer of information. My hard drive is always at hand and always on the go. I keep the hard drive at home and update it regularly as a back-up. When traveling I back-up my hard-drive in case of emergencies. Less relevant information is kept on an external hard-drive. I'm able to link with other folders in search of information. My folders are arranged in hierarchies and are very well organized. I work in drop box and since it's on all my devices, I am able to transfer, share and synchronize information easily. In disseminating information, I use electronic means and use the hard copy as a support. I use the module to teach and so all the information materials are online for students to access. I use IPAD in teaching, I also use power point. I use Bookmarks for saving important websites. My open browsers have book marks for some of them. I also add to them to my 'favourite' using the star so that I can go back to them easily' (VVU).

The responses of other interviewees also shed further light.

'When sharing information, I send it through e-mails. I sometimes send information to my mail so I can assess it and sometimes I also store information on pen-drives (UPSA). When duties need to be completed, I send them home on the external drive to work on the laptop'.

Majority of the faculty assessed their computer literacy skills as intermediate. But in the interviews, the faculty seemed to consider this level of skill as adequate for their task, and also reported performing

well in using the computer for tasks. It was found that computer literacy explained finding and re-finding electronic information, but this was not the case in finding and re-finding print information.

'I have adequate computer literacy skills to manage my electronic information. I create folders in which I arrange my information for storage. In every folder, I have sub-folders too. These folders are named and I write down the names of the folders in my diary. I even keep all my wife's important electronic documents for her too. I have created a folder where I keep hers' (VVU).

'My knowledge in computer literacy skills is adequate to help me manage my electronic information. I will say, I have an intermediate level of computer literacy skills.'

'I am able to search for and retrieve information on the internet, type, save and re-find information. I mostly use the default saving component on the computer (MyDocuments) to saving my electronic information. I do not use folders in storing my information. I keep them on my desktop for easy identification' (UPSA1).

'I am able to organise my information with the computer skills I have. I also seek help from the IT technicians in my department whenever I face any difficulties. I organise and store my electronic information in folders (KNUST)'.

Faculty acquired their computer literacy through a variety of ways. While the questionnaire indicated that majority got their skills through workshops, the interview balances this opinion.

'I acquired it personally through my continuous use of the computer during my PhD programme. I have also had a few on the job training to support my work. I also seek for help from the IT Support Unit when needed. Training is personal, there is no formal training workshop provided yet. I'm learning to use excel, power point effectively also and so I rely on the help of my IT support staff' (UPSA).

'I have not had any formal IT training. I sometimes call on my IT staff to teach me to do the things I can't do, thereby learning to do them. Computer literacy training are organised for faculty occasionally, a few of which I have attended. When the University was introducing its e-platform for distance education, several training programmes were organised and I attended one of them' (KNUST).

Conclusion and Recommendations

Majority of the respondents did not re-find their stored information, both electronic and print. But they refound electronic more than they did print. Factors affecting successful retrieval of stored electronic information go beyond computer literacy. There may be several social and other issues that impact negatively on the ability of faculty to find the information they consciously stored some time ago. A major and critical issue emerging from the interviews is the need to move from computer literacy to broader information literacy, and include all digital and print productivity tools that a researcher would need to manage his or her personal information efficiently. There is need to step down the complex content of indexing and classification taught in the library schools and move some of the aspects that deal with the individual researcher's needs to information literacy content. There is a need to emphasise issues that help identify content, decide what to keep and what to discard, and how to preserve the information considered relevant in the future. Faculty need to learn how to create easy-to-use directory structures, and be consistent in the naming of their files, create folders, and name them in such a way that they can be retrieved in the future. Backing up files in the cloud, using Dropbox, Google docs, bookmarking, and favorites, among others, should be considered very important tools in the effort to ameliorate the events of non-access to stored information. Faculty in Ghanaian universities need to learn how to create alerts such as news aggregators, content alerts, database alerts, table of content alerts, among others (Donkor and Nwagwu 2021). In this way they can schedule information use/re-use for items they created or generated without struggling to recall file and folder names.

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