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THE ROLES OF ACADEMIC LIBRARY AND INFORMATION SYSTEMS IN NIGERIA

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Abstract

Purpose: *The purpose of this paper is to examine the role of academic libraries and information systems in Nigeria. The emergence of computer based Information System (IS) and its application to library services with efficiency cannot be overemphasized. So the collaborative roles the academic libraries and information system play enable libraries explore and derive maximum benefit.*

Design/Methodology/Approach: *The paper adopted conceptual approach. It determines awareness level, concept clarifications, use, and application of IS to library service, cost, staff competence and more. It also analyses academic libraries and information systems importance and challenges for developing countries.*

Implication: *Libraries should find out its place and roles in information system to enhance best services in this information age. If the recommendations are looked into, it will increase the level of efficiency of services in our libraries.*

Originality/ Value: *Information Systems have transformed the way library perform their services, hence libraries in our time should embrace it to enhance their library service delivery.*

Keywords- *Academic Libraries; Information Systems, Information Technologies, Computer.*

Introduction

Information technology (IT) has transformed and changed the way and manner in which every sector of economy function. The importance of information and communication technology (ICT) and its facilities in an organization and institution in developed and developing country cannot be overemphasized. The use of information technology gadgets such as projectors, laptops, telecommunication facilities, electronic media equipment etc., in private and public organization all over the world is common. IT facilitates the economic systems and it is a fact that ICT facilities have become indispensible part in socialization, human's interaction and functions. For instance banks, media and some educational institution cannot function effectively without the use of internet technology, computer, satellite communication etc., which are the drivers of information system in any given organization. It will be out of place to undermine the important role of information system in enhancing library services, promoting library resources sharing and enhancing other range of services.

According Ogonu (2020), libraries are shifting their services and personnel competences in this direction to enable them satisfy patrons' needs in this era of knowledge explosion. Information system application to library activities has enabled efficiency and effectiveness in library operations such as collection, storage, organization, processing, analysis of information, dissemination and other housekeeping routines. This new innovative technology emergence has left the professionals with many challenges such as definitions and clarifications on the concepts, awareness, cost of the application/ roles in libraries, and its implications to the service concept of libraries. Academic libraries are information centers established in support of the mission of

their parent institutions to generate knowledge, equip people with knowledge in order to serve the society and advance the wellbeing of mankind. They are libraries situated within Higher Education Institutions (HEIs) or tertiary institutions. They are largely dependent on their environments, parent institutions and their users (Ekere, 2014). The primary purpose of academic libraries is to support university functions of teaching, learning, research and community services in ways consistent with and supportive of the institution's mission and goals. It therefore means that for libraries to realize these goals, they must update their information resources to meet current demands and needs of patrons, and at the same time empower the librarians' recent skills for better performance on the job. Many libraries, especially academic libraries, need information systems to withstand the additional demand on their profession in this information/ computer age (Ogonu and Dagogo, 2020).

This age has brought different forms of information technologies which can be applied in the field of librarianship such as virtual libraries, digital library, networking, library automation, internet usage, even the application of web tools in libraries and the most recent cloud computing. The only means of applying these technologies in an organization (academic library) is through information systems. Information system (IS)is the collection of technical and human resources that provide the storage, computation, distribution, and communication for the information required by all or some part of an enterprise. It is the novel system in use in Library and Information Science and its use for various purposes such as enhancing services, infrastructures, and reducing operational cost in library. IS could be defined as an information and communication technology (ICT) that an organization uses and also the way in which people interact with technologies in support of business processes. It is a specific information system aimed to support operations, management and decision making.

Information systems typically include an ICT component but are not purely concerned with ICT, it focuses on the end user of information technology. Many organizations are employing this technology for managing their organization services; therefore, it is imperative for libraries irrespective of its nature and type to key into this system because of its enormous advantage over the traditional/manual system. Thus, the focus of this study is the roles of academic libraries and information systems in Nigeria.

Conceptual Clarifications

Information system is a kind of computing technology which encourages sharing the resources and services on local servers/nodes or personal devices. In a broad scope, the term Information Systems is a scientific field of study that addresses the range of strategic, managerial, and operational activities involved in the gathering, processing, storing, distributing, and use of information and its associated technologies in society and organizations. The term information systems is also used to describe an organizational function that applies IS knowledge in industry, government agencies, and not-for-profit organizations. Information Systems often refers to the interaction between algorithmic processes and technology. This interaction can occur within or across organizational boundaries. An information system is the technology an organization uses and also the way in which the organizations interact with the technology and the way in which the technology works with the organization's business processes.

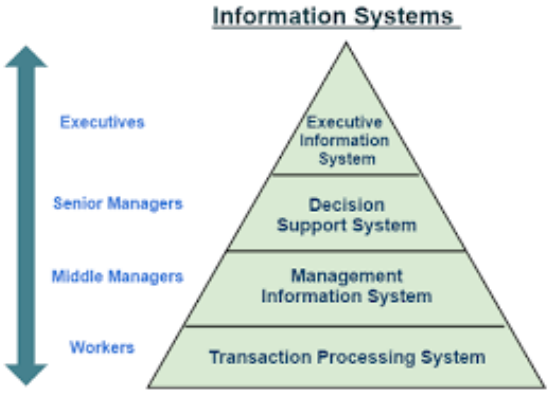
Information systems are distinct from information technology (IT) in that an information system has an information technology component that interacts with the processes' components. One problem with this approach is that it prevents the IS field from being interested in non-organizational use of ICT, such as in social networking, computer gaming, mobile personal usage, etc. Savolainen (2017) provided two views on IS that includes software, hardware, data, people, and procedures.

Components of Information System

1. Software: The term software refers to computer programs and the manuals (if any) that support them. Computer programs are machine-readable instructions that direct the circuitry within the hardware parts of the system to function in ways that produce useful information from data. Programs are generally stored on some input/output medium, often a disk or tape.
2. Data: Data are facts that are used by programs to produce useful information. Like programs, data are generally stored in machine-readable form on disk or tape until the computer needs them.
3. Hardware: The term hardware refers to machinery. This category includes the computer itself, which is often referred to as the central processing unit (CPU), and all of its support equipment. Among the support equipment are input and output devices, storage devices and communications devices.
4. Networks- Networks are connecting system that allow diverse computers to distribute resources.
5. Procedures: Procedures are the policies that govern the operation of a compu ter system. "Procedures are to people what software is to hardware" is a common analogy that is used to illustrate the role of procedures in a system.
6. People: Every system needs people if it is to be useful. This includes "not only the users, but those who operate and service the computers, those who maintain the data, and those who support the network of computers.

The first four components (software, database, hardware and network) make up what is known as the information technology platform. Information technology workers could then use these components to create information systems that watch over safety measures, risk and the management of data. These actions are known as information technology service. Information systems developed in the 1980s were pyramid of systems that reflected the hierarchy of the organization, usually transaction processing systems at the bottom of the pyramid, followed by management information systems, decision support systems, and ending with executive information systems at the top.

This is illustrated thus:



Although the pyramid model remains useful since it was first formulated, a number of new technologies have been developed and new categories of information systems have emerged such as:

- office automation.
- expert systems
- search engines
- geographic information system
- global information system
- data warehouses
- enterprise resource planning
- enterprise systems

Varied information systems support parts of organizations, others support entire organizations, and still others support groups of organizations. Each department or functional area within an organization has its own collection of application programs or information systems. These functional area information systems (FAIS) are supporting pillars for more general IS namely, business intelligence systems and dashboards. As the name suggests, each FAIS support a particular function within the organization, e.g.: accounting IS, finance IS, production-operation management (POM) IS, marketing IS, and human resources IS. In finance and accounting, managers use IT systems to forecast revenues and business activity, to determine the best sources and uses of funds, and to perform audits to ensure that the organization is fundamentally sound and that all financial reports and documents are accurate. Other types of organizational information systems are FAIS, transaction processing systems, enterprise resource planning, office automation system, management information system, decision support system, expert system, executive dashboard, supply chain management system, and electronic commerce system. Dashboards are a special form of IS that support all managers of the organization. They provide rapid access to timely information and direct access to structured information in the form of reports. Expert systems attempt to duplicate the work of human experts by applying reasoning capabilities, knowledge, and expertise within a specific domain.

Some of this specialization is due to the nature of organizations. For example, an information system that works well to maintain a library catalog may not be the best to keep track of the inventory of a supermarket - even though the activities may share some similarities. Although both systems need to keep track of specific items yet the types of items are very different.

In a library catalog, librarians need to keep track of individual books. In a supermarket inventory, one wants to know how many pounds of golden delicious apples are still in stock, but not to keep track of individual apples since they're all the same. A single organization may use a number of different information systems. Consider the supermarket example. A single supermarket will have some type of inventory system, which keeps track of what is in stock, what is sold every day and what is being delivered. This inventory system is linked to a transaction system of actual sales at individual registers, Goldner (2012).

The store manager also needs to keep a scheduling system to organize the working hours of employees. If the supermarket is part of a chain, there will be other information

systems at a different level. Senior management may want to know how stores in specific markets are doing or where to plan for a new store. The use of information system could help libraries and librarians to overcome constraints like those associated with traditional/manual supported system. Therefore, librarians and other personnel who work directly with new technologies should find out more, and have in-depth information, knowledge, skills and competencies on how to plunge directly into practical aspect by exploring the advantage of this novel system.

The implication will be that this IS will empower librarians and libraries to render more effective and efficient and quality services that will help meet the high demands of societal needs. If this system is deployed in libraries, it is certain that the quality of service will be enhanced and libraries can explore it efficiently and make impact both on researchers' input, students, lecturers and other patrons in developing countries. Information System as an employer of computing technology, communication technology, and mass storage technology uses these areas to reshape the way libraries access, retrieve, store, manipulate and disseminate information to users. These reasons are why libraries should acquire information system through careful planning and strategic evaluation of the system development process. It is important therefore that acquisition of information system in libraries, collaboration with IT experts is essential to a successful implementation of the technology for enhancing proper service delivery.

The Roles of Academic Libraries and Information Systems

The roles of academic libraries and information systems in Nigeria cannot be over emphasized. The academic library with its main goal of supporting the mandate of the host institution, which has to do with teaching, learning, research and services cannot carry out its objectives without the complementary role of the information system in this ICT age. Brown and Swan, (2007) enumerate the roles as:

- Access to digital information: Librarians through information system and technology have made great amounts of information readily available in a digital format, thereby enabling students, lecturers and academic communities to easily and remotely access information that is beyond physical books and journals.
- b) Development of digital collections: Librarians through information system today develop more digital collections which are a major financial expense and this involves continuous consultation with academic community so as to understand and meet their needs. The ordering of these collections are also made through information (ordering/inventory) systems.
- Sharing: With the increase in the difficulties and expenses involved in developing the library collections, academic libraries and information systems have a role to play through interlibrary loan agreements which enable loaning, mailing, or scanning of materials that are unavailable in the library's own collection. In addition, libraries make payments agreements for sharing databases that are too expensive for individual libraries to subscribe to.
- Discovery and access: The digital era has changed how academic library patrons search for and retrieve information. These changes require new skills from the users, and librarians must be aware and assist in the process of acquiring these skills. Although librarians indeed offer assistance for those who request it, they usually do not maintain a system of formal training for using the various technological tools. Thus, there appears to be a difference between the capabilities of patrons to use new tools like cloud computing, search engines, other technologies and the perceptions of librarians of these capabilities (Hartel, 2017)
- Metadata and catalogs: Librarians must be made aware of the difficulty in

reaching many items; if they do not provide as much descriptive information as possible on the items in their collections, users will be oblivious of the existence of these items, especially if the items do not exist electronically or are available only in the physical collection. Hence, cataloging all items in a correct and detailed manner is an important project, which can assist users. The use of online public access catalogue (OPAC) can be of a great help in meeting the information needs of the patrons.

- Formal and informal scholarly communication: Scholarly communication has changed dramatically in the digital era and scientific communities are created more rapidly today than in the past. Librarians must adapt accordingly and provide services that are better suited for these changes. The ability to access information by using simple, fast, and electronic means via through information system is extremely important in the current "era of changes", as the digital world has dramatically changed scholarly communication to the extent of transforming the traditional scientific communities to "scientific networks" (Cox and Verbaan, 2016;)

In addition, Genoni et al., (2006), deduced that information system through digital technology has revolutionized not only the way information is packaged, processed, stored and disseminated, but also how users seekers and access information. Academic library no longer restrict themselves to print services such as collection development, cataloguing and classification, circulation and reference services, current awareness, selective dissemination, and other bibliographic services, but have extended their efforts to interdisciplinary concepts and computer software and hardware and telecommunication engineering and technology. Campbell, (2006), observed that numerous creative and useful services have evolved within academic library enabled by digital age through information system such as providing quality learning spaces, creating metadata, offering virtual reference service, teaching information literacy, choosing resources and managing resources licenses, collecting and digitizing archival materials, and maintaining digital repositories.

The academic library to fulfill its role as the heart of the university, the librarians with the aid of information system should contribute to the institution's academic mission by equipping the students with the skills and knowledge they need to achieve academically. The academic community through the knowledge of the information system should have access to e-content, effectively the library is now open 24 hours irrespective of building opening hours, and finding books and journals have become fast and immediate, freeing time up for research and teaching;thereby, promoting the image of the institution. Again, the service role played by the academic library in this modern time cannot be fully executed without the use of information system. Information systems enable the library to serve the patron well, linking to online databases, other information sources and ease accessibility. According to Ugwanyi, Okwor and Ezeji (2011), the abundance of information resources provided by the libraries make them a potential learning environment in a university. The library roles as an educational, social institution and intellectual freedom are crucial to any society which is enhanced by information system through ICT. The Information system via the ICT has the concept of multimedia which involves teaching, learning and research devices using the videos, CD Rom, Floppy Disk, etc. makes education more comprehensive, interesting and attractive. Itincreases motivation in learning and research by collecting relevant information and data. It also gives lecturer confidence in the presentation of his lectures. The state of intellectual freedom in libraries is an important indication of the progress of democracy in a nation. Since libraries provide access to ideas, no matter how unpopular. American Library Association (ALA) office for intellectual Freedom 2007), describes intellectual freedom as "the right of every individual to both seek and receive information from all points of view without restrictions". The library, as a social

institution, plays a crucial role in the formation of the intellectual potentials of society and must, therefore, respond to the changes that take place in the country. Therefore libraries (academic) through the information system in this age should provide equal, free and equitable access to the library resources regardless of the format, content or approach to the members of the community they serve.

The Importance of Academic Libraries and Information Systems

The importance and advantage of academic libraries and information system are innumerable in a given society. Goldner, (2012) posited that with the acquisition of information computing technology, libraries can get out of the business of technology and focus on collection building, patron services and innovation. Gates (2000) observed that the main advantage of any new technology is that it amplifies human potentials. This implies that the collaboration between academic libraries and information systems has benefit to the stakeholders, for librarians they will have to be empowered, for the patrons they can access library resources round the clock and, to the institution research, output will increase as researchers are exposed to current literatures and materials are readily made available via internet service in a variety of sources that they can access. It enhances library services to patrons and improves societal knowledge needs. Also, there are several ways to acquire an information system from outside the organization. Many firms like academic libraries can resort to outsourcing their information systems, which entails transferring the major components of the orgnansation's systems and operations such as data centers, telecommunication and software development and maintenance to a specialized company that provides its services under contract that is in form of off shoring in pursuit of the cost or expertise advantage.

Organistion like academic libraries may choose to acquire an application by leasing a propriety package from a vendor under licensed and having the software customized internally or externally by the vendor or another outside contractor. Another alternative is to deploy an open source application, whose programmme code is free and open for all. Again, an organization can internally develop its information system by using life cycle development (LCD) or rapid application development (RAD) methods. This is developed and maintained through a systematic process known as System life Cycle, which consist of six stages: feasibility study, system analysis,system design, programming and testing, installation and operation and maintenance. The first five stages are system development proper, and the last stage is the long term exploitation. This information system internally developed ensures uninterrupted service and integrity of systems and information in the face of many security threats.

Challenges of Information Systems and Academic Libraries

Although information systems via ICTs have appreciable inroad into Nigeria society but it seems its penetration into the tertiary education especially library has been insufficient. This is because many libraries are still operating with the manual system which is tedious and ineffective. The issues of security and availability of confidential information of libraries and individual still pose as a major problem thereby making libraries and individuals reluctant about depending on information systems based services. The challenges as observed by Khajeh and Sriram (2010): are the interdisciplinary natures which they considered cannot be fully addressed from a purely technical perspective. Another major fear exhibited by libraries is the potential drawbacks of information systems security and availability as a result of security breaches in internet based services.

Again, instances of computer crime and abuse receive extensive media attention, human errors, computer viruses and worms are estimated to cause greater losses in information systems operation. Disasters such as floods, earthquakes, the fires, hacking and other threats make information systems vulnerable. Another challenge is with regards to current technology skills level, that is, the issue of not having enough IT staff and librarians with the technical skills and knowledge to manage and

provide services. These may pose as challenges to its acquisition because without sufficient level of awareness and competence, adoption will be impossible or facilities underutilized. Problems relating to the use of information systems in academic libraries in Nigeria included frequent power outages and insufficient fund for acquisition of the information systems and its technologies devices such as computers, servers, projectors, cameras etc. Madhusudhan, (2008) and Ogonu, (2020) opined that the major barrier to the use of computer based information system in libraries was the lack of subscription, lack of users training, low bandwidth, software, hardware, and trained staff problems.

Conclusions

Information systems are changing the work environment in this era of information explosion. This changing environment will continue to play an increasingly significant major role for libraries as well as other sectors of economy. So libraries should find out its place and roles in information system to enhance best services in this era. With the benefits of this novel system in libraries, Nigerian libraries should deliberately explore its potentials and adopt it as a safer way for preserving knowledge as well as an effective way for delivering quality internet mediated services in the information /computer age.

Recommendations

It was recommended that:

1. The university authority should provide funds to enable information systems in the role of the libraries
2. Library users and staff should be trained to meet up with this computer based services
3. In the same vein libraries authority should acquire information systems that is users friendly and cost effective.

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