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SAFEGUARDING KNOWLEDGE: INFORMATION PROTECTION IN AUTOMATED LIBRARIES OF NIGERIAN UNIVERSITIES

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Abstract:
The rapid proliferation and transformative impact of emerging technologies have ushered in a new era for libraries, rendering them automated, electronic, virtual, and digital. This technological revolution has profoundly altered the library landscape, particularly within the academic sphere. Its impetus is driven by the imperative to enhance research productivity, facilitate efficient information dissemination, and establish a robust network among university libraries to satiate the knowledge cravings of their patrons. This paper examines the evolution and significance of library automation, a process involving the application of automatic and semi-automatic data processing machines (computers) to manage traditional library tasks such as acquisition, circulation, cataloguing, reference, and serial control. Through the integration of computers and related information technologies, library automation is poised to revolutionize information management within libraries while ensuring the safeguarding of valuable knowledge resources.

Keywords: Library automation, emerging technologies, digital library, information technology, knowledge management.

Introduction

The rapid growth and uses of emerging technologies has changed the traditional library into automated, electronic, virtual and digital library. This revolution has completely changed the library scenario, especially in an academic setup. This revolution is the need of the hour to make research more productive, to disseminate information and to establish a strong network system among all university libraries to quench the information thirst of the clientele. Library automation may be defined as the application of automatic and semi-automatic data processing machines (computers) to perform traditional library housekeeping activities such as acquisition, circulation, cataloguing, reference and serial control. Library automation is the process of performing all information operations/activities in library with the help of computers and related information technologies, thereby providing the protection strategies.

Automating a library is only the first step, in the process of keeping up with new trends in information and communication technology which is paramount importance. If the libraries are not aware or fail, to meet these challenges successfully the tremendous investment that universities have made in their library collections and facilities will be seriously undermined. Nok (2006) observes that the success of automation in the university library depends largely on the ability of staff to facilitate and implement the process. Proper, frequent, and regular in-house IT training is a necessity if the maximum benefit is to be gained from the automation of library services.

It was further added that if the library ensures sound and quality automation of services and information resources, they need to creates new approach to user education, pays attention to the provision of continuing education for library staff, helping them to master the new techniques required for the management of electronic and the networked information resources and services, because the gains of automation are immeasurable.

Bavakutty (2006) pinpoint the fact that the information explosion, shrinking budgets, rising costs, a shift in the medium of publication, and lack of adequate staff are the major reasons that necessitate dependence on latest technologies in university libraries. The future of library automation system will include information kiosks, where people with no computer experience can access information easily. Information scientists will create human computer interfaces and library scientists will manage the resources. This study therefore seeks to determine protection strategies of information in automated libraries and information safety in Nigerian Universities.

Statement of the Problem

It is the wish and desire of a modern library to apply and enjoy the benefits of emerging technologies in its library. Developments in emerging technologies have had a tremendous impact on all kinds of libraries and information resource centres over the last two and half decades. The concept of library automation in universities is not new, but the situation is still not leveled with developed nations. The barriers that exist in the effective implementation of protection strategies in some Nigerian libraries are: systematic planning for automation, software and hardware collection, lack of awareness, nonexistence of standards, financial limitations, uncertainty and most importantly, lack of willing and competent human resources. In spite of all these limitations, this paper seeks to find out the strategies of information protection and safety in Nigerian university libraries.

Objectives of the study

The main objective of the study was to find out protection strategies of information in automated libraries and information safety in Nigerian Universities, while the specific objectives were as follows:

1. To find out the extent of awareness of the need for safety of information as a protection strategy of information safety in the Nigerian Universities libraries
2. To find out the level of automated libraries in Nigerian Universities as a protection strategy of information safety.
3. To find out the level of online saving of information as a protection strategy of information safety in Nigerian university libraries.
4. To find out the level of use of backup as a protection strategy of information safety in Nigerian university libraries

Research questions

The following research questions were also asked:

1. What is the influence of awareness of the need for safety of information on information safety in the Nigerian Universities?
2. What is the influence of automation of libraries on information safety in the Nigerian Universities?
3. What is the influence of online saving of information on information safety in Nigerian university libraries?
4. What is the influence of the use of backup on information safety in Nigerian university libraries?

Hypotheses

The following hypotheses were tested:

1. There is no significant influence of awareness of the need for safety of information on information safety in the Nigerian Universities.
2. There is no significant influence of the level of automation of libraries on information safety in Nigerian Universities.
3. There is no significant influence of the use of online saving of information on information safety in the Nigerian University libraries.
4. There is no significant influence of the use of backup on information safety in the Nigerian University libraries.

Literature Review

Awareness of the Need for Safety of Information as protection strategy

Automation or computerization is an important application of ICT in libraries. It facilitates speedy library operations, services, and access to delivery of information. According to Cholin (2005), libraries in developed countries computerized their operations two decades ago, they can boast of information protection and strategies. However, the pace of ICT applications in libraries in developing countries has been very slow. Some librarians are reluctant to introduce automation, fearing that it would minimize their role. Malik (2005) considers that software is the most important component of the automation process. Due to limited financial resources and lack of guidance, some University libraries face difficulties in selecting or developing suitable software to meet their needs. Haider (2006) writes that proper awareness of current software is rarely available to university libraries.

Studies conducted by Hopkinson (2000), Seneviratne and Amaraweera (2003) and Vasishta (2005) provide basis to on conducive status of ICT applications in the libraries of developing countries. International agencies and organizations like the Asia Foundation, government of the Netherlands, International Development Research Centre of Canada, United States Agency for International Development, and World Health Organization (WHO) have played an important role in library development in some countries, these organizations have contributed to computer equipment, software preparation, networking, training of librarians, and curriculum development, with intention to provide better situation for information protection

According to Davarpanah (2001), the application and accessibility of IT facilitates the free flow of information, creative expression and effective management. Libraries are using the Information Technology in general to automate a wide range of administrative and technical process, build databases, networks and provide better services to their users. The use of IT has become imperative for the efficient management of modern libraries as library Automation is one of the major applications of IT in libraries. It has helped to change the libraries In-house activities (Acquisition, Cataloguing, Indexing, Serial control, Circulation etc.) from manual system to automation. In 1980s, most of the libraries computerized their in-house activities. Recently, libraries have to implement increasingly complex solutions that involve distributed networking and access to remote information resources. The use of IT in libraries has tremendously increased due to its enhanced user satisfaction, cost effectiveness, faster and simpler programs, rapid communicative interaction, easier operational procedures and information safety.

Effective use of IT in libraries increase efficiency in operations, eliminates excessive errors repetitive nature of works, improves the quality and range of services, facilities easy and wider access to all kinds of information sources, facilitates faster information communication, increase moral and motivation of

library staff, facilitates cooperation and resource sharing, save time, space, improves productivity and image of library. The electronic resources that are available in libraries are an outcome of the advances in both computer technologies, including information storage and delivery mechanism, and software providing user friendly interfaces. Cholin (2005) opine that in most of the libraries in the western countries, Online Public Access Catalogues (OPAC) have almost replaced card catalogues, offering enhanced search capabilities for accessing the collection of library. Many libraries also provide a web interface to their library and information system, often including direct links of electronic journals, books and internet resources, these combine to produce webbed locks for information protection if librarians are aware of these strategies.

Process of Saving Information Online in Libraries as protection strategy

Jayaprakash and Balasubramani, (2011) note that most of the libraries, in initial stage of their computerization, assign priorities on library house-keeping activities, as these activities are most rudimentary to make the foundation of automation stronger and the success of other advanced services depends heavily upon these activities. In contrast, Amekuedee (2005) argues that the cataloguing operation is the first library housekeeping operations to be automated when a library decides to automate. Circulation control is one of the most widely automated library housekeeping operations, and it is often the first and simplest activity to be automated in a given library Mutala (2012) states that cataloguing and acquisition are the two modules which are labour intensive. In addition, cataloguing forms the foundation of any bibliographic record, while acquisitions require highly accurate records for purchasing purposes. As a result, the two must be prioritized when automating a library. Given these diverse opinions librarians should be cognizant and plain with their priority concerns and reasons for automating, as this would help them opt for or design a system that supports their priority operations and make an effective use of frequently scarce funding.

Library services are divided into two categories: library housekeeping routines and information retrieval. Housekeeping routines include acquisition, cataloguing, circulation and serials control. All housekeeping operations such as; acquisition, cataloguing, circulation, and serial control of the library can be automated (Bhanja and Barik, 2009). Automation can be applied profitably in the following library housekeeping operations; acquisition, classification, cataloguing, stock-taking, serial control and circulation (Rajput and Gautam 2010). However Neelakandan et al., (2010) observe that the most commonly known housekeeping operations which can be automated are acquisition, serials management, cataloguing and circulation.

In order to improve efficiency of library housekeeping operations, Veer (2010) note that library should be automated in the following manners; automated acquisition system, automated cataloguing system, automated circulation system and automated serial control system. Acquisition of library materials is an essential library task which can be computerized. Selection of material, bibliographic verification, ordering, budgeting and file management in the acquisition process can be computerized, which every process is chosen by any library, what is paramount is the protection of the information.

External Storage Device and Information Safety in Library as a protection strategy

A storage device is anything that is used to store computer data in automated libraries which are: Floppy disks, hard disks, optical disks, CDs and magnetic tapes are all types of storage device (Lynne, 2001). Physical storage refers to how data are actually kept on the storage disk.

Harder (2003) asserts that hard drive or hard disk storage provides faster access to files than a diskette in automated libraries. A hard drive is the storage area within the computer itself, where megabytes of space

are available to store bits of information. Also known as a hard disk, a hard disk platter is a flat, rigid disk made of aluminium or glass and coated with a magnetic oxide. A hard disk consists of one or more platters and their read-write heads. A read-write head is the device that reads the data from the disk platter into the computer. It also records (or „writes") data onto the platters. Hard disk platters in microcomputers are typically 3½ inches (about 10 centimetres) in diameter: the same size as the circular mylar disk in a diskette. However, the storage capacity of a hard disk far exceeds that of a floppy disk. Also, the access time of a hard disk is significantly faster than a diskette. Unlike diskettes, which begin to rotate when one requests data, hard disks are continually in motion, so there is no delay as the disk spins up to speed. Like diskettes, hard disks provide random access to files by positioning the read-write head over the sector that contains the requested data.

According to Barbara (2006), there are three types of optical disks that can be used in automated libraries.

- CD-ROM"s are the most popular type of optical storage. CD-ROM stands for Compact Disc Read Only Memory. A computer CD-ROM disk, like its audio counterpart, contains data that has been stamped on the disk surface as a series of pits. To read the data on a CD-ROM an optical read head distinguishes the patterns of pits that represent bytes. CD-ROM disks provide tremendous storage capacity. CD-ROMs usually come with data already written onto them. These days most applications software is provided on CD-
ROM.
- It is now possible for computer users to write data to an optical disk. These are known as WORM disks, which stands for „Write Once Read Many". A single CD holds up to 680 megabytes, equivalent to over 300,000 pages of text in character format, and these disks are quite durable. These CDs are known as CD re-recordable (CD-R). There are other types of WORM disks, although there is no standard for these.
- There is a third type of optical disk which can be erased and use to rewrite new information. These are sometimes known as EO (erasable optical) disks and CD-RW (CD rewritable) (Kimber and Richard, 1996).

Research Methodology

The study adopted a survey design strategy since the expected population was, over 1000. This targeted population was all librarians in academic libraries who were expected to attend the 55th Nigerian Library Association Conference and Annual General meeting in Lagos. The instrument used was questionnaire tagged "protection strategies of information in automated libraries questionnaire (PSIALISNUQ)" the validity of the instrument was done by experts in test and measurement Department of University of Uyo. The reliability co- efficient was 0.87 derived from administration of the instrument to 20 respondents

These instruments were then administered randomly to 400 librarians in the conference hall. Two research assistants who helped, in addition to the researcher were able to collect 383 questionnaires representing 96 percentage returns. Descriptive statistics (mean and standard deviation) were used to answer the research questions while T- test analysis was used to test hypothesis at 0.05 alpha levels.

Table 1

Sample frame of the respondents from universities

S/N	Names of institution	Number returned
1.	Abia State University, Abia	13
2.	Adamawa University Ille-Ife	3
3.	Afe Babalola University, Ekiti	11

4	Akwa Ibom State University, Ikot Akpaden	4
5.	America University of Nigeria, Adamawa	8
6.	Babcock State University, Ogun State	13
7.	Bayero University kano	3
8.	Benue State University, Benue	8
9.	CETEP City University, Lagos	5
10.	Coledge of Education, Afaha Nsit	5
11.	Federal University of Ondo	11
12.	Federal University of Technology, Akure	13
13.	Landmark University, Kawra	5
14.	National Open University of Nigeria Lagos	11
15.	University of Benin, Benin City	13
16.	University of Calabar, Calabar	11
17.	University of Ibadan, Ibadan	19
18.	University of Lagos	39
19.	University of Maiduguri, Maiduguri	11
20	University of Nigeria, Nsukka	28
21.	University of Port Harcourt, Port Harcourt	22
22.	TOTAL	256

Table 2
Sample frame of the respondents from polytechnics and colleges of education

S/N	Names	Numbers
1	Adeyemi College of Education, Ondo	5
2	Auchi Polytechnic, Edo State	5
3	College of Education, Agbor	2
4	College of Education, Ikere, Ekiti State	5
5	College of Education, Warri	3
6	Delta State Polytechnic	5
7	Emmanuel College of Education, Oyo	7
8	Federal College of Education, Abeokuta	5
9	Federal College of Education (Special) Oyo	7
10	Federal College of Education Zaria	2
11	Federal Polytechnic Ede	7
12	Federal Polytechnic Ida	3
12	Federal Polytechnic Ilaro	5
13	Federal Polytechnic Nassarawa	5
14	Federal Polytechnic Nekede	4
15	Federal Polytechnic Mubi	2
16	Federal Polytechnic Offa	3

17	Federal Polytechnic Oko	8
18	Lagos State Polytechnic	9
19	Niger State College of Education Minna	3
20	Nasarawa State Polytechnic Lafia	3
21	Imo State Polytechnic	5
22	Osun State Polytechnic	8
23	The Polytechnic Ibadan	11
24	Rufus Giwa Polytechnic, Owo	5
	TOTAL	127

Analysis of results and discussion

Question 1

What is the influence of awareness of the need for safety of information on information safety in the Nigerian Universities libraries? Table 3 was used to answer the research question.

Table 3: Descriptive analysis of the influence of awareness of the need for safety of information on information safety in the Nigerian Universities libraries

Awareness	N	X	SD	Remark
High	242	15.04	1.37	
Remarkable Difference				
Low	141	13.57	1.32	

Source: Field Survey

The result in table 3 shows the influence of awareness of the need for safety of information on information safety in the Nigerian Universities. More people (242) affirmed high awareness of the need for safety of information with higher mean level (15.04) of information safety than their counterparts identified with low (141) awareness of the need for safety of information with lower mean level (13.57) of information safety. The result therefore means that there is remarkable influence of awareness of the need for safety of information on information safety in the Nigerian Universities.

Research Question 2

What is the influence of automation of libraries on information safety in Nigerian Universities? Table 4 was used to answer the research question.

Table 4: Descriptive analysis of the influence of automation of libraries on protection strategy for information safety in Nigerian Universities

Automation of Libraries	N	X	SD	Remark
None	206	13.74	1.25	
Partial	129	15.00	1.30	Remarkable Difference
Fully	48	16.48	0.50	

Source: Field Survey

The result in Table 4 shows the influence of automation of libraries in Nigerian Universities on protection strategy for information safety. Most (206) people affirmed none existence of automation of libraries in Nigerian Universities with lowest mean level (13.74) of information safety. (129) people affirmed partial level of automation of libraries in Nigerian Universities with little level of information safety (15.00) while (48) people affirmed full influence of automation of libraries in Nigerian Universities with highest level of information safety (16.48). The result therefore means that there is remarkble influence of automation of libraries in Nigerian Universities on information safety.

Research Question 3

What is the influence of online saving of information on information safety in Nigerian university libraries? Table 5 was used to answer the research question.

Table 5: Descriptive analysis of the influence of online saving of information on information safety in Nigerian university libraries

Online Saving	N	X	SD	Remark
High	88	15.75	0.95	
Remarkable Difference				
Low	295	14.13	1.46	

Source: Field Survey

The result in Table 5 shows the influence of online saving of information on protection strategy on information safety in Nigerian university libraries. Few respondents were identified with high level of online saving of information having higher mean level (15.75) of information safety, while most (295) respondents were of low online saving of information having lower mean level (14.13) of information safety. The result therefore means that there is remarkble influence of online saving of information on information safety in Nigerian university libraries.

Research Question 4

What is the influence of the use of backup on information safety in Nigerian university libraries? Table 6 was used to answer the research question.

Table 6: Descriptive analysis of influence of the use of backup on information safety in Nigerian university libraries

Backup utilisation	N	X	SD	Remark
High	173	15.08	1.31	
Remarkable Difference				
Low	210	14.02	1.53	

Source: Field Survey

The result in Table 6 shows the influence of the use of backup on information safety in Nigerian university libraries. Less people (173) affirmed high use of backup as a protection strategy with higher mean level (15.08) of information safety, while more respondents (210) were of low backup utilisation with lower mean level (14.02) of information safety. The result therefore means that there is remarkable influence of the use of backup on protection strategy on information safety in Nigerian university libraries.

Hypotheses testing

Hypothesis One

There is no significant influence of awareness of the need for safety of information on information safety in the Nigerian Universities. In order to test the hypothesis, independent t-test analysis was used in comparing the mean scores of the two independent groups (see Table 7).

Table 7: Independent t-test analysis of the influence of awareness of the need for safety of information on information safety in the Nigerian Universities.

Variable	N	X	SD	t
High	242	15.04	1.37	
				10.31*
Low	141	13.57	1.32	

***Significant at 0.05 level; df = 381; critical t-value = 1.960**

As shown in Table 7, the calculated t-value is 10.31. This value was tested for significance at 0.05 level with 381 degree of freedom. The obtained t-value (10.31) is greater than the critical t-value (1.960).

Hence, the result was significant. The result therefore means that there is significant influence of awareness of the need for safety of information on information safety in the Nigerian Universities. The result therefore was in agreement with the research findings of Haider (2006) who wrote that proper awareness of current software is rarely available to university libraries.

The result of the findings was also in line with the findings of Malik (2005) who considered software as the most important component of the automation process. The significance of the result caused the null hypotheses to be rejected while the alternative one was accepted.

Hypothesis Two

The null hypothesis states that there is no significant influence of the level of automation of libraries on information safety in Nigerian Universities. In order to test the hypothesis, one-way analysis of variance was used to analyze the data in order to determine the influence of the level of automation of libraries on information safety in Nigerian Universities (see Table 8).

Table 8. One-way analysis of variance of influence of the level of automation of libraries on information safety in Nigerian Universities.

Groups	N	$\bar{X}$	SD
None	206	1.45	0.50
Partial	129	1.82	0.38
Fully	48	1.90	0.31
Total	**383**	**1.63**	**0.48**

Source of variance	SS	Df	Ms	F

Between group	14.70	2	7.35	37.54*
Within group	74.39	380	196	
Total	**7559.90**	**179**		

***significant at 0.05 level; df = 2 & 380, Critical F-value = 2.99**

Table 8 Shows that the calculated F-value of (37.54) was obtained after testing for significance at 0.05 alpha level with 2 & 380 degrees of freedom. The calculated F-value (37.54) was greater than the table F-value (2.99). Hence, the result was significant, and this means that there is significant influence of the level of automation of libraries on information safety in Nigerian Universities.

Hypothesis Three

There is no significant influence of the use of online saving of information on information safety in the Nigerian University libraries. In order to test the hypothesis, independent t-test analysis was used in comparing the mean scores of the two independent groups (see Table 9).

Table 9: Independent t-test analysis of the influence of the use of online saving of information on information safety in the Nigerian University libraries

Variable	N	X	SD	t
High	88	15.75	0.95	9.81*
Low	295	14.13	1.46	

***Significant at 0.05 level; df = 381; critical t-value = 1.960**

As shown in Table 9 the calculated t-value is 9.81. This value was tested at 0.05 level with 381degree of freedom. The obtained t-value (9.81) is greater than the critical t-value (1.960). Hence, the result was significant. The result therefore means that there is significant influence of the use of online saving of information on information safety in the Nigerian University libraries. The result therefore was in agreement with the research findings of Harder (2003) who asserts that hard drive or hard disk storage provides faster access to files than a diskette in automated libraries.

He further informed that a hard drive is the storage area within the computer itself, where megabytes of space are available to store bits of information. The significance of the result caused the null hypotheses to be rejected while the alternative one was accepted.

Hypothesis Four

There is no significant influence of the use of backup on information safety in the Nigerian University libraries. In order to test the hypothesis, independent t-test analysis was used in comparing the mean scores of the two independent groups (see Table 10).

Table 10: Independent t-test analysis of the influence of the use of backup on information safety in the Nigerian University libraries.

Variable	N	X	SD	t

High	173	15.08	1.31	7.14*
Low	210	14.023	1.53	

***Significant at 0.05 level; df = 381; critical t-value = 1.960**

As shown in Table 10 the calculated t-value is 7.14. This value was tested at 0.05 level with 381degree of freedom. The obtained t-value (7.14) is greater than the critical t-value (1.960). Hence, the result was significant. The result therefore means that there is significant influence of the use of backup on information safety in the Nigerian University libraries. The result therefore was in agreement with the research findings of Harder (2003) that asserted that hard drive or hard disk storage provides faster access to files than a diskette in automated libraries and that a hard drive is the storage area within the computer itself, where megabytes of space are available to store bits of information. The significance of the result caused the null hypotheses to be rejected while the alternative one was accepted.

Conclusions

Based on the findings of the research work, it was deemed necessary to conclude that there are various protection strategies of information in automated libraries and incidence of information safety in Nigerian Universities. It was also concluded there is significant influence of awareness of the need for safety of information on information safety in the Nigerian Universities. There is significant influence of the level of automation of libraries on information safety in Nigerian Universities. There is significant influence of the use of online saving of information on information safety in the Nigerian University libraries. Finally, there is significant influence of the use of backup on information safety in the Nigerian University libraries.

Recommendations

Based on the findings of the research, the following recommendations are deemed necessary:

1. Librarians should be educated on various protection strategies of information in automated libraries so that one can be sure of information safety and utilization at any point in time.
2. It should be ensured that online saving of information are adequately enhanced or equipped.
3. Utilization of backup of information should be encouraged in in order to enhance information safety in the Nigerian Universities.

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