

Personal Factors and Digital Preservation Practices Among Library Personnel in Federal Universities

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Abstract

The emergence of digital technology and digital information resources have made it necessary for university libraries to prioritise digital preservation as a way of safeguarding these resources. However, ensuring long term use of information materials through digital preservation seems difficult as some library personnel lack experience, skills and are ill-qualified to carry out digital preservation practices. The study examined personal factors and digital preservation practices among library personnel in federal universities. The survey research design of the correlational type was adopted for this study. The population of the study consisted of 202 library personnel from the six federal universities in Nigeria. The total enumeration (census) was adopted for the study. Questionnaire was used for data collection and the results are presented in tables and percentages. Digital preservation practices mostly undertaken by library personnel in federal universities include: migration ($\bar{x}$ =3.26; std dev. =.528); emulation ($\bar{x}$ =3.25; std dev. =.654); encapsulation ($\bar{x}$ =3.19; std dev. =.654); digitisation ($\bar{x}$ =3.35; std dev. =.660); cloud computing ($\bar{x}$ =3.15; std dev. =.857); technology preservation ($\bar{x}$ =3.17; std dev. =.787); refreshing ($\bar{x}$ =3.11; std dev. =.825) and replication ($\bar{x}$ =3.06; std dev. =.852. Female library personnel constituted the majority of the respondents. The study composed of library personnel within the 41-45 years age bracket, dominated by library personnel with 6-10 years of working experience and library personnel who are bachelor degree holders. There was a significant relationship between educational qualification and digital preservation practices among library personnel while age and work experience of library personnel were not significant. Personal factor (educational qualification) determined the digital preservation practices among library personnel in federal universities. Therefore, library personnel in federal universities should be constantly trained and retrained in requisite skills needed to carry out digital preservation practices to remain abreast of and fit into the demand of the fourth industrial revolution.

Keywords: *Digital preservation practices, personal factors, university library, library personnel.*

INTRODUCTION

The university library is a library attached to a university, serving the teaching and research needs of students, lecturers and staff in the university community. Okwoli (2015) stated that the primary purpose of a university library 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. This is achieved through the acquisition of relevant information materials, processing, organising, preserving and disseminating them to the library users to enhance learning, teaching and research activities of the university community. The university library houses diverse information resources which include those that are born digital or those that are consciously converted from print into digital formats. The university library ensures the prolong use of these digital resources through digital preservation practices. The adoption of information and communication technology however has advanced the service delivery in university libraries and has transformed information resources housed in them, their organisation, dissemination, preservation and how these resources are used (Akintonde and Awujoola, 2022).

With the world rapidly evolving toward digital media and information, most university libraries are progressively stocking digital resources, allowing students and faculty to access and use current and relevant materials for teaching, learning and research. The emergence of information and communication technology has impacted the way in which information resources are organised, disseminated and preserved in the library. These resources can however be manned and managed by university library personnel who possess adequate and required skills to aid digital preservation practices in the university library

Digital preservation refers to the preservation of materials that were created initially in digital form and have never existed in print or analog form utilising imaging and recording technology to create digital resources for access and preservation (Pal, 2021). Information preservation is one of the most important issues in human history, culture and economics even through societal development and civilisation. While earliest information was recorded in carvings on stone, ceramic, bamboo or wood, civilisation paved the way for new storage media and techniques for recording information such as writing on silk or printing on paper (Gautam, 2021). However, the revolutionary change has transformed and has influenced information storage sector even with its invention of electronic storage media and preservation methods. Gautam (2021) defined digital preservation as incorporating policies, strategies and actions to ensure access to reformatted and born-digital content regardless of the challenges of media failure and technical change. It entails planning, resource allocation and deployment of preservation methods and technology.

Digital preservation is the capacity to store digital records and information for a duration that can outlive technological advancements without worrying about tampering or loss of readability (Pal, 2021). It is the process of stabilising and preserving authentic digital recordings that have been reformatted so that they can be retrieved, read and used in the future in spite of media and technology change. Mesanya and Ngulube (2020) opined that ensuring long term use of information materials through digital preservation seems difficult since library personnel lack experience, competence and are ill-qualified to carry out digital preservation practices. A factor that could influence digital preservation practices among library personnel is their personal factors.

Personal factors explain why different individuals behave and conduct themselves in different manners even when placed in same situations, conditions and with similar experiences.

Personal factors such as age, work experience and the academic qualification of librarians could determine either to engage or not engage in digital preservation practices. The personal factors of university library personnel are factors that predispose and trigger university library personnel's reactions either positively or negatively towards digital preservation practices. This has made it imperative for the study to investigate personal factors and digital preservation practices among library personnel in federal universities in Southwestern, Nigeria.

LITERATURE REVIEW

Library is a collection of books and non-book materials created, organised and housed in a place for use, with one or more persons trained to assist in the retrieval, access and use of the collection to enabling individuals (Nwaigwe and Onwuama, 2017). The holdings of libraries are the priceless heritage of mankind as they preserve facts, ideas, thoughts, accomplishments, and evidence of human development in multifarious areas, ages, and directions. The past records constitute a natural resource and are indispensable to the present and future generations; therefore, any loss to such materials is simply irreplaceable (Nworie, 2019). Libraries are made up of both print and digital collections and resources to support lifelong learning, research, scholarly communication as well as preservation and conservation of the recorded knowledge. As more information resources are digitised or born digital, the question of how to keep these resources accessible and usable for future generation becomes increasingly pressing. Digital preservation practices in libraries present a lasting solution to this question.

Digital preservation, as defined by Tiwari (2015), refers to the maintenance of digital content. Digital preservation is a collection of processes, activities and digital information management practices that are implemented over time to ensure long-term accessibility of digital information. Digital preservation is not a new issue in the libraries. Along with the growth of digital collections in the library, there is an urgent need for the library to take some important measures in order to preserve their digital collections as well as printed collections. Digital preservation according to Grácio, Fadel and Valentim (2013) refers to an organisational management process that encompasses various activities necessary to ensure that a digital object can be accessed, retrieved and used in the future, from the ICT existing at the time and with guarantees of authenticity.

Preservation of information resources in Nigerian federal university libraries is an integral library operation that can make the libraries useful. It prepares the materials for access as long as they are wanted. Since university libraries exist to support the teaching and learning activities through provision of information in various formats, digitally preserving these information resources is equally important for continuous access, retrieval and use. Mesanya and Ngulube (2020) opined that ensuring long term use of information materials through digital preservation seems difficult since library personnel lack experience, competence and are ill-qualified to carry out digital preservation practices. A factor that could influence digital preservation practices among library personnel is their personal factors.

Personal factors according to Ogunleye (2017) refer to individual characteristics that influence decision-making in all spheres of life. They are regarded as the characteristics and qualities that make up an individual's personality, behaviour and overall outlook on life. These factors can have a significant impact on the actions and decisions that individuals make throughout their lives. Also, personal factors can be defined as those attributes of an individual that relate specifically to the person, and uniquely describe the individual. Demographic factors like age, gender, occupation as well as educational qualification, work experience, income and

rank amongst others are part of personal factors.

Martin and Gay (2018) opined that personal factors of librarians in university libraries are the individual characteristics and unique qualities that influence their library service effectiveness, job satisfaction, and overall performance in the library. These factors can have a significant impact on how librarians interact with information resources, users and other library staff, carry out library routines and engage in library practices like digital preservation. Hence, personal factors such as age, gender and occupation; in addition to education and work-related factors such as experience, task, and structure are said to play a vital role in shaping individual behavior at work place (Smith, 2017). However, in the course of this study, personal factors examined are age, educational qualification and work experience of librarians. The concept of educational qualification as a construct of personal factors of librarians refers to the formal education and degrees earned by librarians, which may include their highest degree, specialised certifications and professional qualifications.

According to Darling- Hammond (2017), educational qualification is often considered a significant personal factor that can influence librarians' knowledge, skills and expertise and thereby impact their performance and effectiveness in carrying out certain activities like digital preservation in the library. As a result, librarians who hold higher degrees, such as a PhD, other advanced degrees, specialised certifications or professional qualifications are often assumed to have a deeper understanding of librarianship and may be perceived as more knowledgeable by users, colleagues and the library. Librarians with higher academic degrees tend to be more committed to library activities that are digitally inclined and more concerned about their competence to carry out library activities than others.

Age is another indicator of personal factors of librarians to be considered for this study. Age simply refers to the length of time a person has been alive since their birth. Age of librarians may be perceived as an important factor that can influence their work performance in the library and interactions with information materials, users and colleagues. Age can have both positive and negative implications for librarians in carrying out library activities such as digital preservation. According to Oyedipe and Popoola (2019), age can be seen as an indicator of experience, maturity and adaptability to the practices and routines in the library setting. However, age can also have some drawbacks, such as reduced energy, creativity, reluctance and openness to new ideas.

Bishoff and Smith (2015) identified lack of funding, age related factor, educational qualification of library personnel, lack of expertise, working experience, lack of institutional support and uncertainty of where to start as the barriers to implementation of sustainable digital preservation practices. In the same vein, librarians working experience also engaging in digital preservation practices. Librarians with long years of work experience tend to be glued to the traditional system of performing library activities and may therefore not be open to engaging in digital preservation practices. Librarians with little years of working experience tend to be open to learning and requisite skills as they still have more years of service and can conveniently engage in digital preservation practices in the library.

OBJECTIVES OF THE STUDY

The main objective of the study was to investigate personal factors as predictors of digital preservation practices among library personnel in federal universities in Southwestern Nigeria. The specific objectives are to:

- i. examine the prevailing personal factors of library personnel in federal universities in

- Southwestern Nigeria;
- ii. examine the types of digital preservation practices undertaken by library personnel in federal universities in Southwestern Nigeria;
- iii. determine the frequency of digital preservation practices by library personnel in federal universities in Southwestern Nigeria;
- iv. ascertain the relationship between personal factors and digital preservation practices among library personnel in federal universities in Southwestern Nigeria;

METHODOLOGY

The descriptive survey research design was adopted for the study. The population comprises 202 library personnel in six federal university libraries in Southwestern, Nigeria which are: University of Ibadan, Ibadan, Oyo State, Obafemi Awolowo University, Ile-Ife, Osun State, Federal University of Agriculture Abeokuta, Abeokuta, Ogun State, Federal University, Oye-Ekiti, Ekiti State, Federal University of Technology, Akure, Ondo State, University of Lagos, Akoka, Lagos State. Total enumeration method was used to sample the entire population of 202 library personnel in three university libraries. The questionnaire was the chief data collection instrument. Data gathered was analyzed using the Statistical Package for Social Sciences (SPSS). Demography of respondents and research questions was equally analyzed with descriptive statistics, using the simple percentages, frequency count, and standard deviation as well as correlating analysis. The analyses is presented in tables.

RESULT AND DISCUSSION

Objective 1: Prevailing personal factors of library personnel in federal universities in Southwestern Nigeria

Table 1: Prevailing Personal Factors of Library Personnel

Age Range

Items	20-25	26-30	31-40	41-50	51 & above	$\bar{x}$ (Mean year)	Std Dev
Age	25 13.4%	10 5.4%	58 31.2%	81 43.5%	12 6.5%	31-40 years	1.110

Academic Qualification

Items	Diploma	OND	HND	First Degree	Master's	M.Phil	PhD.	$\bar{x}$ (Average qualification)	Std Dev
Academic qualification	18 9.7%	25 13.4%	20 10.8%	72 38.7%	38 20.4%	4 2.2%	9 4.8%	First Degree	1.110

Work Experience

Items	0-5yrs	6-10yrs	11-15yrs	16-20yrs	21-25yrs	26-30yrs	31yrs & above	$\bar{x}$ (Average work experience)	Std Dev
Work Experience	18 9.7%	25 13.4%	20 10.8%	72 38.7%	38 20.4%	4 2.2%	9 4.8%	11-15 years	1.110

Table 1 shows the personal factors of library personnel to include: age ($\bar{x}$ =31-40years; std dev. =1.110); academic qualification ($\bar{x}$ =First degree; std dev. =1.110) and work experience ($\bar{x}$ =11-15years; std dev. =1.110). Based on this, it can be inferred that majority of the respondents are of ages 31-40 years, possesses first degree and have worked in the library within 11-15years. Durodolu and Adekanye (2017) opined that the educational qualification of librarians is elemental to possession of skills and their ability to engage in digital preservation practices. Higher educational qualification enables librarians to undergo digital trainings, workshops, seminars and conferences that will make them digitally and technically competent to carry out complex library duties such as digital preservation and to be able to cope with the digital trends. This can be inferred that that librarians and library officers with higher qualification such as MLIS, MEd. and Ph.D possess high level of digital literacy skills and can conveniently engage in digital preservation compared to librarians with lower qualification such as BLIS, BEd. and Diploma. Librarians with higher qualification are considered to be more exposed to the digital world compared to librarians with lower qualification. In the same vein, librarians working experience also determines possessing requisite skills for carrying out digital preservation. Librarians with long years of work experience tend to be glued to the traditional system of performing library activities and may therefore not be open to engaging in digital preservation practices. Librarians with little years of working experience tend to be open to learning and acquiring skills needed to carry out library activities such as digital preservation.

Objective 2: Types of digital preservation practices undertaken by library personnel in federal universities in Southwestern Nigeria

Table 2: Digital Preservation Practices undertaken by Library Personnel

S/N	Items	SA	A	D	SD	$\bar{x}$	Std Dev
1.	The library creates the original application that was used to create or access the digital objects on future computer platforms (Encapsulation)	57 30.60%	112 60.20%	13 7.00%	4 2.20%	3.19	.654
2.	The library preserves the original application program even when older operating systems and infrastructure is no longer available (Emulation)	63 33.90%	113 60.80%	4 2.20%	6 3.20%	3.25	.654
3.	The library transfers digital materials from one generation of computer technology to a subsequent one e.g transfer information on a floppy disk to CD-ROM or conversion of Microsoft Word to PDF (Migration)	54 29.00%	128 68.80%	2 1.10%	2 1.10%	3.26	.528
4	The library stores digital resources on any medium to represent their binary digits or bits, such as a CD-ROM or a DVD (Bit stream copying)	53	89	21	23	2.92	.944

		28.50%	47.80%	11.30%	12.40%		
5.	The library converts materials from hard copies to electronic copies (Digitisation)	81	94	7	4	3.35	.660
		43.50%	50.50%	3.80%	2.20%		
6.	The library stores and manage data using a host of remote servers hosted on the internet (Cloud Computing)	72	82	20	12	3.15	.857
		38.70%	44.10%	10.80%	6.50%		
7.	The library keeps and maintain the technological environment used for the creation of contents including operating systems, original application software, media drives, etc (Technology preservation)	66	96	14	10	3.17	.787
		35.50%	51.60%	7.50%	5.40%		
8.	The library transfers data between two types of the same storage so there is no alteration of data (Refreshing)	62	94	18	12	3.11	.825
		33.30%	50.50%	9.70%	6.50%		
9.	The library creates duplicate copies of data on one or more systems (Replication)	57	99	14	16	3.06	.852
		30.60%	53.20%	7.50%	8.60%		
10.	The library rescues content from digital media or from absolute or damaged hardware and software environment (Digital archaeology)	72	83	5	26	3.08	.986
		38.70%	44.60%	2.70%	14.00%		
Weighted mean=3.15; Std. dev =0.77							

Key: SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree

Table 2 shows the types of digital preservation practices undertaken by library personnel in federal universities. The result of item-by-item analysis as shown in Table 2 reveals that the respondents indicated that some of the digital preservation practices undertaken include: migration ($\bar{x}$ =3.26; std dev. =.528); emulation ($\bar{x}$ =3.25; std dev. =.654); encapsulation ($\bar{x}$ =3.19; std dev. =.654); digitisation ($\bar{x}$ =3.35; std dev. =.660); cloud computing ($\bar{x}$ =3.15; std dev. =.857); technology preservation ($\bar{x}$ =3.17; std dev. =.787); refreshing ($\bar{x}$ =3.11; std dev. =.825) and replication ($\bar{x}$ =3.06; std dev. =.852). The digital preservation practices occasionally carried out by library personnel are bit stream copying ($\bar{x}$ =2.92; std dev. =.944); and digital archaeology ($\bar{x}$ =3.08; std dev. =.986).

Based on this, it can be inferred that some of the digital preservation practices undertaken by library personnel in federal universities include migration, emulation, encapsulation, digitisation, cloud computing, technology preservation, refreshing and replication. This finding is in line with the view of Gbaje (2011) which explained that several techniques of digital preservation identified for the preservation of digital information resources in the university library include: bit stream copying, digitisation, emulation, migration, canonisation, replication and encapsulation among others. Also, the findings of Adekannbi and Wahab (2015) on Comparative Analysis of the Preservation and Conservation Techniques of Selected Special and

Academic Libraries in Nigeria revealed that the most commonly used digital preservation techniques by both library types were refreshing, technology preservation and migration. Contrarily, the study by Ahmad and Rafiq (2024) found out that among the digital preservation practices, only replication was in practice at a progressive rate, followed by metadata recording and media refreshing that was sometimes practiced in these libraries. The other practices were rarely or never practiced in these libraries.

Objective 3: Frequency of digital preservation practices by library personnel in federal universities in Southwestern Nigeria

Table 3: Frequency of Digital Preservation Practices undertaken by Library Personnel

S/N	Items	D	W	M	Q	O	$\bar{x}$	Std Dev
1.	Encapsulation	45 24.20%	27 14.50%	40 21.50%	33 17.70%	41 22.00%	3.01	1.478
2.	Emulation	42 22.60%	32 17.20%	48 25.80%	28 15.10%	36 19.40%	3.09	1.415
3.	Migration	44 23.70%	21 11.30%	49 26.30%	32 17.20%	40 21.50%	2.98	1.450
4	Bit stream copying	43 23.10%	23 12.40%	39 21.00%	32 17.20%	49 26.30%	2.89	1.508
5.	Digitisation	64 34.40%	29 15.60%	35 18.80%	28 15.10%	30 16.10%	3.37	1.484
6.	Canonisation	17 9.10%	42 22.60%	43 23.10%	24 12.90%	60 32.30%	2.63	1.374
7.	Refreshing	59 31.70%	33 17.70%	34 18.30%	23 12.40%	37 19.90%	3.29	1.514
8.	Replication	43 23.10%	27 14.50%	49 26.30%	30 16.10%	37 19.90%	3.05	1.427
9.	Cloud computing	48 25.80%	26 14.00%	30 16.10%	35 18.80%	47 25.30%	2.96	1.543
10.	Metadata	49 26.30%	22 11.80%	35 18.80%	31 16.70%	49 26.30%	2.95	1.550
Weighted mean=3.02; Std. dev =1.47								

Key: D = Daily, W=Weekly, M = Monthly, Q = Quarterly, O = Occasionally

Table 3 shows the frequency of digital preservation practices undertaken by library personnel. The result of item-by-item analysis explains that the respondents indicated digital preservation practices carried out daily include: encapsulation ($\bar{x}$ =3.01; std dev. =1.478); digitisation ($\bar{x}$ =3.37; std dev. =1.484); refreshing ($\bar{x}$ =3.29; std dev. =1.514) and cloud computing ($\bar{x}$ =2.96; std dev. =1.543). The result also reveals digital preservation practices carried out monthly to include: emulation ($\bar{x}$ =3.09; std dev. =1.415); migration ($\bar{x}$ =2.98; std dev. =1.450) and replication ($\bar{x}$ =3.05; std dev. =1.427). Digital preservation practices undertaken occasionally include: bit stream copying ($\bar{x}$ =2.89; std dev. =1.508); canonisation ($\bar{x}$ =2.63; std dev. =1.374) and metadata ($\bar{x}$ =2.95; std dev. =1.550).

Based on this, it can be inferred that some of the digital preservation practices frequently

undertaken by library personnel include encapsulation, digitisation, refreshing and cloud computing. Digital preservation practices such as computing, emulation, migration and replication were undertaken monthly by library personnel. Bit-stream copying, canonisation and metadata were identified to be occasionally carried out by library personnel. This finding is in line with the view of Kavishe and Dulle (2016) who investigated Preservation Skills and Strategies of Electronic Information Resources in Digital Era: Case of University of Kwazulu-Natal Libraries. The findings of the study revealed that 16 (57.1%) out of the 28 respondents identified that they frequently carry out preservation practices which include metadata, emulation and migration.

Objective 4: Relationship between personal factors and digital preservation practices among library personnel in federal universities in Southwestern Nigeria

Table 4: Relationship between digital preservation practice and sub-scales of personal factors

factors							
Variables	N	Mean	St. Dev	Df	r	P	Sig
Digital preservation practice	186	31.55	5.88	185	.126	.086	Not Sig
Personal factors	186	9.58	2.84				
Sub-personal factors							
Age	186	3.24	1.11	185	.077	.297	Not Sig
Educational qualification	186	3.73	1.48	185	.293	.000	Sig
Work experience	186	2.61	1.34	185	.010	.897	Not Sig

Table 4 reveals that majority of the respondents are of ages 31-40 years, possesses first degree and have worked in the library within 11-15years. Personal factors like age and work experience of library personnel does not play a significant role in determining whether library personnel carry out digital preservation practices or not, educational qualification is an important variable that can make a difference in the disposition of library personnel. The educational qualification of library personnel is elemental to possession of skills to conveniently engage in digital preservation practices.

CONCLUSION

Digital preservation practices in university libraries have become increasingly important due to the exponential growth of digital content and the need to ensure that this content remains accessible over time. As a result of this, in as much as the personal factors like age and work experience of library personnel does not play a significant role in determining whether library personnel will carry out digital preservation practices or not, educational qualification is an important variable that can make a difference in the disposition of library personnel. The educational qualification of library personnel is elemental to possession of requisite skills required to engage in digital preservation practices. Higher educational qualification enables library personnel to undergo digital trainings, workshops, seminars and conferences that will make them digitally and technically competent to carry out complex library duties such as digital preservation and to be able to cope with the digital trends.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

1. Library management in federal universities should provide regular training and capacity-building programmes for library personnel on digital preservation practices, particularly less frequently used practices such as emulation, migration, replication, bit-stream copying, canonisation and metadata creation. This will enhance the competence of personnel and promote the effective preservation of digital information resources.
2. Library personnel should be encouraged and supported to acquire higher educational qualifications in library and information science and related areas. This is particularly important because educational qualification was found to have a significant relationship with digital preservation practices.
3. University libraries should develop and implement comprehensive digital preservation policies and programmes that standardise preservation practices among library personnel, irrespective of their age or years of work experience. Such policies should provide clear guidelines, appropriate technologies, adequate infrastructure and continuous professional development to ensure consistent and sustainable digital preservation practices.

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