

**Emerging Technology Awareness, Data Literacy Skills, Institutional Support and
Digital Records' Management Practices among Librarians in Universities in
Southwest Nigeria**

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Certification

This is to certify that this thesis was carried out by Fehintoluwa Elizabeth OMOSEBI with Matriculation Number LCU/PG/002546, a student in the Department of Information Management in the Faculty of Communication and Information Science, Lead City University, Ibadan, Nigeria and this work has not been previously submitted.

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Dedication

This Thesis is dedicated to God Almighty, the author and finisher of my faith whose mercy kept me thus far.

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Abstract

Digital records are becoming more pervasive in library and information centers which means that the traditional records management practices may no longer be effective. Taking up digital records management practices however requires some skills and strategies which may not be available to all. This study therefore examines the influence of emerging technology awareness, data literacy skills, and institutional support on digital records' management practices among librarians in universities in southwest Nigeria. The study adopted a mixed method research approach, combining both quantitative and qualitative methods. The research instrument consisted of a structured questionnaire, adapted from previous. The questionnaire was administered on 378 librarians from universities across south-west Nigeria out of which 272 were returned. Data analysis was done through the use of descriptive and inferential statistics. The results showed a high engagement in digital record management practices among the librarians (Mean = 3.31). The result also showed a high level of awareness of emerging technologies (Mean = 3.42), data literacy skills (Mean = 3.41), and institutional support (Mean = 3.04). Furthermore, the test of hypotheses revealed that, while emerging technology awareness (Adj $R^2 = .220$; $P > 0.05$) and data literacy skills (Adj $R^2 = .285$; $P > 0.05$) have significant influence on digital records management among the respondent, institutional support (Adj $R^2 = .008$; $P < 0.05$) does not significantly influence digital records management practices. The study concluded that the high level of awareness and data literacy skills among librarians is an encouraging sign that should be boosted through adequate capacity development and institutional support which currently is not at the expected level. It was therefore recommended that universities libraries in Southwest Nigeria should invest in regular and comprehensive training programs focused on digital record management practices.

Keywords: Data literacy, Digital Records, Emerging Technologies, Institutional Support, Library Technologies, Records Management

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Chapter One

Introduction

1.1 Background to the Study

Digital records has been in existence and used for so many years, it is important and necessary for the smooth running of organizational activities. Digital record as the name implies, is the record stored on electronic media and can be readily accessed, or changed, This means that a piece of equipment is required to view, read or listen to record stored electronically. More so with the emergence of technology records now comes in electronic formats which are otherwise known as born digital. For example, electronic mails are systems that enable users to compose, create, transmit and manage electronic documents and images. Email as it is popularly called is now the primary mode of communication between employees and employers and internal communication. However, questions on what procedures are in place to respond to court order and produce email as a legal record are being asked, also, questions on how the integrity of the record be maintained and how long email record are being kept are asked. This explains why digital records management practices essential in modern organisations.

Digital records management practices encompass various activities aimed at effectively managing digital records throughout their lifecycle. These practices include records creation or capture, records organisation, and records pluralization or duplication. This is by no means a comprehensive list of records management practices but they represent the core activities that have been recognized by practitioners and scholars¹. The life of a digital record begins with creation or capture. This involves the systematic and

controlled creation of digital records in accordance with established policies and procedures. Digital records are expected to be created with accurate and relevant metadata, including information such as title, creator, date, and classification². It is also recommended that records creators must adhere to recordkeeping standards and guidelines to ensure the authenticity, reliability, and integrity of the records. In the digital era where records have transcended a singular form to include image, video, sound and others, records are also created through capturing. This is done through a video recorded, camcorders, audio tapes, photo camera, scanning machines and other instruments used to gather information from various sources³.

Digital records management also include records duplication. Duplication refers to the process of copying digital records to ensure redundancy and mitigate the risk of data loss or corruption. Duplicate copies of records may be created for backup purposes, disaster recovery, or to facilitate access and sharing. Digital records management practices include establishing protocols for the creation, storage, and management of duplicate copies, as well as periodic verification to ensure their integrity and usability³. The proliferation of ICT has made digital records to multiply in copies and this makes proper digital records organisation an essential records management practice.

Records organization involves the systematic arrangement and classification of digital records to facilitate their easy and quick retrieval, access, and use. Experts opined that digital records should be organized in a logical and consistent manner, using standardized classification schemes, file naming conventions, and folder structures. Metadata and indexing systems may be employed to enhance searchability and discoverability of

records. Effective organization of digital records streamlines retrieval processes, reduces duplication of effort, and promotes efficient record keeping practices⁴.

Through the improvement brought about by technological innovation, record management has become a very much sensitive field of study when it comes to following the laid down principles of record management which is largely geared towards the paper-based records. More so, the greatest challenges which digital systems present are the creation and maintenance of reliable records and the preservation of their authenticity over time. It is vital for every organisation regardless of the profession that its records should be able to stand for the facts which they concern, that is the content is trustworthy and be properly managed³. Hence, the need for digital records management which plays a significant role in libraries.

Digital records are information stored on electronic media and can be readily accessed, or changed through the use of electronic gadgets. In digital records management, the place of creation, caption, organisation and pluralization of information cannot be over emphasized. Documents in organisations are created as part of a particular information process in the libraries or organisations. The creation of records is concerned with bringing into existence information essential for the smooth running of the libraries and organisations. Some examples of records are emails, reports, databases, samples and objects, letters, minutes of meetings, photographs, social media sites, faxes, spreadsheets, maps and plans, information in business systems, text messages, policy and briefing papers, research data, memo and so on.

Records serve as proof of the operations and duties of a unit, department or an organization at large. The information it includes and the circumstances surrounding its

development determine whether it qualifies as records upon which decisions could be made. More so, it cannot be emphasized enough that libraries as information centres are required to make sure that records are properly filed, archived, stored, disposed of, and made retrievable using appropriate systems as required by legislation, and that appropriate security measures are in place to ensure secured library records in the library's workflow and storages⁴. Every piece of information generated, communicated, and received throughout a work or routines has the potential to become a record.

Based on types, records could be internal, external, transactional and referential. External records contain information for use outside the organization. It may be created inside or outside the organization. For example, staff payroll records, bulletins and government regulations. Internal record on the other hand contains information needed to run the organization, It may be created inside the organization, example includes internal memorandum, inventory control records, requisition, purchases and so on. The transactional records are documents used in organization's day to day operations, they are business forms that can be generated manually, electronically or via e-commerce system. Examples are, invoices, requisition, sales and purchase orders, cheques, statement, contracts, shipping documents, receipt and so on.

The referential records are information needed to carry on the operation of an organization, they are information that sustains, serves as a backbone or skeletal framework around which the organizational activities revolve. They are records that contains information on how situations were handled in the past lending credence to the immediate future, Examples are policy manuals, policy memos, sales performance, financial reports and so on. For whatever reasons, records are maintained for

administrative, legal, referential and historical value they possess⁵. Records are seen as organizational assets and lifeblood that keeps organization rolling, therefore, it is imperative that good records management systems and practices are implemented considering all the format appears in adhering strictly to the accepted and universal principle of record keeping⁶.

The principle of integrity is an information governance program constructed so the information assets generated by or managed for the organization will have a reasonable guarantee of authenticity and reliability. Also, the principle of protection which is information governance program is constructed to ensure an appropriate level of protection to information assets that are private, confidential, privileged, secret, classified, essential to business continuity, or that otherwise require protection. Furthermore, principle of compliance is information governance program which is constructed to comply with applicable laws, other binding authorities, and the organization's policies. Principle of availability is also organization information assets maintained in a manner that ensures their timely, efficient, and accurate retrieval. Principle of retention, is also how organization maintains its information assets for an appropriate time, taking into account its legal, regulatory, fiscal, operational, and historical requirements.

Lastly, principle of disposition in organization shall provide secure and appropriate disposition for information assets no longer required to be maintained, in compliance with applicable laws and the organization's policies⁷. Furthermore, records are not just any document an organization produces or receives as experts opined that only 10 to 15 percent of records created or generated can be classified as record. Therefore, records management specify which document or information becomes records based on their

types, and value to the organization. Thus, the inevitability for record management practices involves Controlling, organizing and coordinating records within a comprehensive framework of sets of rules, procedures, systems, processes, and behaviors is the goal of records management. The practices make sure that the organization benefits from efficient administration of one of its most important assets, its records, and that trustworthy documentation of activities and decisions is preserved and maintained available for reference and use when necessary⁸.

The stages in accordance to record continuum model are create, capture, organize and pluralize. The life cycle idea has been argued in literature to work well for paper-based records administration, this idea is thought to be inadequate when applied to digital records since records are more likely to move into new formats as a result of technological advancements than to reach a clear point. To be readable by their authors and users, digital records must always be transacted, transferred, and converted by hardware and software⁹. According to record continuum model, record creation, is one of the component of records management which is the process of identifying, selecting, and taking control of records or documents after creation or receipt to ensure their proper management, preservation, and accessibility throughout their lifecycle in the library. Record capture involves the process of identifying, collecting, and capturing records from various sources and formats. This could include physical documents, electronic files, emails, databases, and more. The goal is to ensure that all relevant information is accurately collected and stored in a structured manner. Effective capture practices often involve utilizing technologies like scanners, Optical Character Recognition (OCR), and metadata extraction to streamline the process and enhance searchability²⁹.

Organising records which is also a sub metric in record continuum model is concerned with the systematic and intentional process of arranging, categorizing, describing, and managing records within their original context and throughout their lifecycle. This process ensures that records are managed in a way that reflects their functions, activities, and relationships within the organization, and that they can be readily accessed, retrieved, and understood by both current and future users¹⁰. Once records are captured, they need to be organized in a systematic way for easy retrieval and reference. This involves categorizing records based on their content, purpose, and relevance. Implementing a well-defined classification system, such as a taxonomy or hierarchical folder structure which helps ensure that records are logically organized. Metadata, such as creation date, author, and keywords, can further enhance the organization and searchability of records because they can serve as access points²⁹.

Pluralization refers to the recognition and management of the multiple versions, perspectives, and contexts that records may have throughout their lifecycle within an organization. It acknowledges that records are not static entities but are subject to change, reinterpretation, and recontextualization over time, reflecting the diverse viewpoints and evolving circumstances within which they are created and used. Pluralization within the Records Continuum Theory emphasizes the need to capture and manage the various manifestations of records, including drafts, copies, annotations, and adaptations, as they contribute to a comprehensive understanding of an organization's activities and decision-making processes. By acknowledging and accommodating the plural nature of records, libraries and organizations can enhance the authenticity and reliability of their records⁴. Pluralization of records refers to the management of multiple instances of the same record.

In organizations, it's common to have duplicates or different versions of records due to collaboration, updates, or multiple sources. Proper record management requires mechanisms to identify, link, or merge these instances to prevent redundancy and confusion. Version control, data deduplication, and content management systems can aid in managing pluralized records effectively²⁹. Furthermore, as a result of the emergence of the technological innovation which has brought new systems of records management like digital record management system, the librarians and record manager needs to be aware in addition to being equipped with competences and need to stay relevant and be effective in this era of technological revolution otherwise known as the era of emerging technologies.

Emerging technology is about the innovations, advancements, and developments in various fields that have the potential to significantly impact and transform societies, industries, and the way we live and work. These technologies are in the early stages of adoption but show promise for widespread use and influence in the near future. Emerging technologies can span a wide range of sectors and applications. Examples includes Artificial Intelligence (AI) and Machine Learning, Blockchain, 5G network, Internet of Things (IoT), Augmented Reality (AR) and Virtual Reality (VR), Biotechnology and CRISPR, Quantum Computing, Robotics, 3D printing, and Renewable Energy Technologies and so on¹⁴⁸. These technologies have cut across all spheres of life and organizational activities such as records keeping therefore libraries are not left behind in this transformative impact of ICT thus making activities like record management a major point of concern looking at the importance of records to the effective delivery of library services.

The emerging technologies have great impact in all areas of human lives including management of records. The world is currently now experiencing advances in the management of records in organizations using numerous emerging advanced technologies. While scholars have looked at various perspectives in the management of records, they have not considered examining the issue that surround record management in the emerging technology era. Since several technologies are now available, majority of which will impact management of records. It is therefore considered important to prepare the mind of records management experts and also create awareness regarding transformation in records management introduction by the new era. Hence, this research considers its awareness and examine the management of records in emerging technology era, and attempts to discuss the various emerging technologies being used to manage records, draw out the benefits of using these emerging technologies in managing records, and then projecting into the future in terms of drawing out the way forward.

Looking at the necessity of awareness and readiness for the obstructive nature of emerging technology, the researcher dimmed it fit to measure emerging technology in this study using the three constructs of situation awareness theory which are perception, comprehension and projection. Situation Awareness (SA) according to the theorist, refers to a psychological concept that involves an individual's perception and understanding of their environment, including the elements, events, and dynamics within it. It focuses on how people gather and process information to form a comprehensive mental picture of their surroundings, enabling them to make informed decisions and take appropriate actions. Perception is recognizing elements and events in the environment through sensory inputs. Comprehension is understanding the meaning and significance of the

perceived information and Projection is the act of anticipating future developments based on the current understanding¹¹.

Situating the constructs into the concept of emerging technology awareness as an independent variable of this study, perception is concerned with the act of being aware of the existence of the emerging technologies like web3, Internet of Things (IOT), robotics, artificial intelligence, big data etc¹². There are ways of perceiving different situations per time, the perception or awareness of a particular situation may not necessarily influence use according to literature, librarians may be aware of the existence of the emerging technologies, but may not understand the features and benefits. Comprehension on the other hand is a second stage of awareness concerned with understanding the features, use and benefits the emerging technologies, this stage of awareness is about knowing about the existence and availability of the technologies. Projection, the third stage of awareness according to the situation awareness theory is the ability to understand the pros and cons of a particular situation which influences the decision making process of individuals including the librarians. Projection is concerned with expectations of individuals concerning what they are being aware of¹³.

Moreso, the emerging technologies are based on the concept of Cyber-Physical Systems or CPS (integration of computing, communication, and control), and heavily relies on three groups of technologies (pillars): the Internet of Things (IoT) paradigm (characterized by the pervasive presence of a variety of uniquely addressable cooperating objects such as mobile phones, sensors, and actuators); Cloud and Fog Computing (providing virtually unlimited computing, storage, and communication resources as

utilities, i.e. on-demand and pay-per-use); Big Data Analytics (to extract value from challenging amounts of data)¹⁴.

Data literacy which is another variable is inevitable to librarians as individuals, librarianship as a profession and libraries as information management organization. As one of the independent variables of this study, data literacy skills refers to the knowledge, skills and dispositions to use data ethically to inform policies, decisions and practices. Data literacy involves managing and securing data, accessing and generating data, evaluating and interpreting data, communicating with data. Data-informed practice is enabled by taking a purposeful, collaborative, solution focused, ethical and inclusive approach to our engagement with both using, and learning about the use of data¹⁵. Data literacy is the ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied, and the ability to describe the use case, application and resulting value.

In order to take advantage of the potential presented by the "data revolution," a recent UN report argues for the need for "global data literacy." Data literacy is defined in this context, as well as many others, as a set of technical, statistical, and mathematical skills. Moreover, the concept of data literacy expanded includes, not just competencies in reading and working with datasets but also the ability to account for, intervene around and participate in the wider socio-technical infrastructures through which data is created, stored and analysed. There is need to know what can be done about the society's seemingly endless supply of digital data and the rapidly expanding "datafication" processes, Data literacy is a typical answer¹⁶. In its broadest meaning, literacy refers to "certain ways of thinking about and practicing reading and writing" with the aim of

comprehending or verbally expressing concepts in a given environment. In other words, people in literate civilizations have certain ways of creating and reading written material, as well as attitudes about these methods.

It is evident that with the proliferating impact of technology in the field of record management, data literacy is an inevitable competence that information managers must equip themselves with. Moreover, the need for data-literate people has expanded as a result of the business world's fast digitalization, which is partly attributable to the COVID-19 epidemic. According to a research by the Corporate-Higher Education Forum (BHEF), nearly 70% of business leaders give preference to hiring candidates with data capabilities. This holds true for all job classifications, including those in the healthcare sector, from top executives to frontline employees¹⁷. Data literacy in this study is measured by the variables in the Dreyfus model of skills acquisition which is based on skill development through instruction and experience. In this model, the data literate librarian works through five developmental stages: novice, competence, proficiency, expertise and mastery. The first stage is the novice stage where there is rigid adherence to taught rules or practice. This means that a novice in the data driven world cannot explore and cannot go beyond what is learnt to do an in-depth study or to know more, and there is no exercise of discretionary judgement. According to the Dreyfus model, a librarian entering the novice phase will know nothing about the work or the task at hand.

The Dreyfus model assumes that the librarian is still learning the basics through following commands and is therefore unable to make independent decisions. At this stage, the librarian's primary responsibility is to fully comprehend the setting in which the material will be used. The second stage is one step better than a novice, it is the advance

beginner stage, in this stage, there is little knowledge or skills . Also, at this point, a librarian should have observed and exercised with multiple examples of a work or job, as required by the Dreyfus model of skill acquisition. Because of this, the librarian will have an easier time handling various situations, since they will be familiar with them. The librarian has learned enough to feel prepared to carry out a given work or responsibility. Unfortunately, if something goes wrong, the librarian is likely to point the finger at the regulations. Dreyfus's theory of learning suggests that this occurs when a librarian generalizes a rule or guideline to all cases. Because of this, the librarian may feel less responsible and continue to want assistance.

Next is the competent stage, the rate at which a librarian achieves proficiency is proportional to the difficulty of the work or activity. A skilled librarian should have spent between two and three years learning the ropes, as predicted by the Dreyfus Model of Skill Acquisition. Once again, the length of time needed to accomplish adequately varies with the nature of the work being done. A surgeon, for instance, may need more than three years of schooling to reach proficiency in the field. A marketer, however, may gain a great deal of knowledge, expertise, and competence in just three years. A competent performer is one who meets or exceeds the norms for his or her position in terms of productivity, organization, and expertise. The ability to take ownership of problems and generate viable alternatives is another hallmark of a competent person¹⁸. The Dreyfus model of skill development postulates that experts will be familiar with a wide variety of norms and protocols. This makes it challenging at times to generalize from those to other contexts. They need to pick and choose which methods and guidelines to apply when

confronted with a challenge. Additionally, they may be feeling the heat of the moment at work, making matters even more complicated.

The next phase of the stage of skill acquisition is the proficient stage and this is the stage before the expert stage. Once one has reached the Expert level in the Dreyfus model of skill acquisition, the skillful person is aware of its capabilities. This is because, when problems arise, it is often necessary to come up with novel approaches to fixing them. These problems can only be resolved by an expert with extensive knowledge in the field. Experts, in accordance with the Dreyfus model of skill acquisition, zero in on what really matters in any given circumstance. This allows them to set priorities and make snap judgments¹⁹.

Finally on the stage is the mastery stage. At this point, according to the Dreyfus model of skill acquisition, a person will be able to perform a task without being given detailed instructions. As a result of their vast expertise, experts are able to apply the relevant standards and norms to every given circumstance. The Dreyfus model of skill acquisition postulates that an expert will use its analytical skills to evaluate a novel situation and determine which aspects of it the expert already knows how to handle. An expert's use of intuition is crucial because it allows them to produce optimal outcomes. It is challenging to pinpoint an expert, however, because experts rarely see themselves in that light. When asked to explain their fields of expertise, experts often struggle to do so. This is why it is common for people, like co-workers, to recognize experts in their field²⁰.

Another variable that could affect or influence records management practices is institutional support. This is seen as the length to which an organisation or government agency supports her sub units in order to achieve some particular set goals and contribute

to the achievements of the units. The extent to which the government and its agencies aid development in order to reduce the negative effects of insufficient infrastructure is institutional support. Institutional support can be in any form, it could be educational support, financial support, and technical support. Institutional support refers to the tools, guidelines and frameworks that organizations and institutions offer in order to further their objectives and the welfare of their constituency.

Institutional support might come in a variety of shapes, including financial aid, infrastructure, staff development initiatives, legal frameworks, and operational procedures. Also, institutional support is the resources, policies and structures provided by organizations or institutions to support the achievement of the goals and well-being of their members. This support can take various forms, including financial assistance, infrastructure, staff development programs, policy frameworks and administrative systems. Financial support which is one of the submetrics for institutional support guarantees the institution's access to the resources it needs to operate efficiently, effectively and to stay relevant-technologically²¹. Institutions invest in physical infrastructure and facilities to create a climate that is favorable for studying, conducting research, and working. The whole environment is improved by having enough and well-maintained facilities, such as libraries, laboratories, classrooms and student support centers.

Financial support is concerned with financial resources given to libraries to support their mission and operations, this includes funding for research, scholarships, infrastructure development, equipment procurement, and other essential activities. Financial support ensures the availability of necessary resources for the institution to function effectively²².

As regards Technical support, institutions and organizations invest in physical infrastructure and facilities to create an environment conducive to learning, research, and work. Moreover, adequate and well-maintained facilities, such as libraries, laboratories, classrooms, and student support centers, contribute to the overall effectiveness of the institution²³. Another inevitable institutions support platforms is in the area of staff development and training. Institutional support includes professional development programs and training opportunities for faculty and staff. These programs enhance their skills, knowledge, and teaching capabilities, leading to improved quality of education and research outcomes²⁴. Institutions develop administrative support systems to streamline processes and facilitate efficient operations. These systems may include human resources management, budgeting, procurement, and other administrative functions²⁵.

Technical support is inevitable area for optimum staff performance. A scholar said that in today's rapidly evolving and complex world, institutions play a crucial role in providing support to individuals seeking to enhance their skills, knowledge, and capabilities²⁶. Technical support within an institutional framework involves providing assistance and resources to individuals to navigate and excel in various technological domains. This can encompass a wide range of services and resources, including infrastructure and equipment. Institutions invest in modern infrastructure, laboratories, and equipment to ensure that learners have access to state-of-the-art technology²⁷. This enables hands-on learning and practical application of theoretical concepts. Technical workshops and training, regular workshops, seminars, and training sessions introduce learners to emerging technologies, coding languages, software applications, and other technical skills relevant to their chosen fields²⁸. Institutions foster an environment conducive to

research and innovation by providing access to specialized software, databases, and resources necessary for conducting cutting-edge research.

Educational support is another submetric for institutional support and it focuses on empowering employees with knowledge, skills, and opportunities that facilitate holistic growth and development. Constant training and retraining enhances skilling, reskilling and unskilling which comes with the aim of equipping employees with new skills, keep them abreast of new technological innovations and how to make effective utilizations of those technological invention. Therefore, there is need for constant upgrading, blending and integration with modern trends with the sole aim of meeting the information needs of users whose information needs are numerous but can be met by leveraging on the potentials provided by emerging technology deliverables.

In an era characterized by rapid technological advancements and data-driven decision-making, the role of university libraries are undergoing a profound transformation because the existence of emerging technologies have ushered in a wave of technological innovations that have far-reaching implications for higher education institutions and the way they disseminate, manage, and utilize information. University libraries, as integral components of the academic ecosystem, are confronted with the imperative to adapt and integrate these technologies, enhance data literacy skills, establish robust institutional support mechanisms, and refine records management practices to effectively serve their constituents in this digital age.

The emerging technologies are marked by the convergence of various cutting-edge technologies such as artificial intelligence, Internet of Things (IoT), blockchain, and advanced data analytics. These technologies are reshaping not only how information is

accessed and consumed but also the very nature of knowledge creation and dissemination. As academic institutions increasingly rely on data-driven insights to inform research, teaching, and administrative decisions, the concept of data literacy has emerged as a critical skill set for all stakeholders, including librarians and library users. Furthermore, university libraries must receive comprehensive institutional support and funding to successfully navigate the complex landscape of emerging technologies and their implications.

Integral to the effective functioning of university libraries is the establishment of robust records management practices. In an environment where digital content proliferates and diverse data formats abound, maintaining accurate and accessible records becomes paramount. Records management encompasses not only the preservation of historical documents but also the organization and accessibility of digital assets, contributing to the seamless flow of knowledge within the academic community. This study therefore, seeks to investigate the interplay between emerging technologies, data literacy skills, institutional support, and records management practices in university libraries.

1.2 Statement of the Problem

As the volume of digital records increases, understanding the approaches librarians need to adopt in ensuring the usability of these resources are imperative. Based on observation, digital records management practices in university libraries are poor due to lack of skills needed for information organisation, retrieval and proper service delivery hence bringing about disorganisation and loss of records within the library. Ineffective records management practices can have very negative impact on the quality of library services and how well a university librarian can discharge its duties to library patrons. Given the

role of university libraries in the university, it is essential to have effective digital records management practices instituted in these libraries and addressing various issues relating to digital record management practices.

However, as at the time of this study there is dearth of literature that encompasses emerging technology awareness, data literacy skills, institutional support and the digital records management practices. Researchers have examined various factors such as ICT skills, infrastructural facilities, training and development and others as factors affecting digital records management^{31, 32, 33}. However, none of them has examined the combination of technology awareness, data literacy skills, institutional support in a study. It is based on this premises that the researcher is investigating the emerging technologies awareness, data literacy skill, institutional support and records management practices of librarians in universities, southwest Nigeria.

1.3 Aim and Objectives of the Study

The aim of this study is to investigate the awareness of emerging technologies, data literacy skills, institutional support and digital records management practices in university libraries in south west Nigeria. The specific objectives of the study are to;

- i. identify the digital record management practices adopted by librarians in University libraries, Southwest Nigeria
- ii. identify the level of awareness of emerging technologies of librarians in university libraries, Southwest Nigeria
- iii. identify the level of data literacy skills of librarians in university libraries in Southwest Nigeria

- iv. identify the level of institutional support given to librarians in university libraries, Southwest Nigeria
- v. establish the influence of emerging technologies on digital records management practices librarians in University libraries Southwest Nigeria.
- vi. ascertain the influence of data literacy skill on the digital record management practices of librarians in University libraries in Southwest Nigeria.
- vii. determine the influence of Institutional support on the digital record management practices of librarian in University libraries, Southwest Nigeria
- viii. ascertain the joint influence of emerging technologies, data literacy skills and institutional support on digital record management practices of librarians in University libraries in Southwest Nigeria.

1.4 Research Questions

The following research questions are derived from the objectives of the study:

1. What is the record management practices adopted by librarians ?
2. What is the level of awareness of the emerging technologies of librarians?
3. What is the level of data literacy skills of librarians in university libraries ?
4. What is the level institutional support given to librarians ?

1.5. Hypotheses

The following null hypotheses were tested at 0.05 level of significance

H₀₁: There will be no significant influence of emerging technologies awareness on digital records management practices of librarians in university libraries, Southwest Nigeria

H₀₂: There will be no significant influence of data literacy skill on the digital record management practices of librarians in university libraries in Southwest Nigeria

H₀₃: There will be no significant influence of Institutional support on the digital record management practices of librarians in university libraries, Southwest Nigeria

H₀₄: There will be no joint significant influence of emerging technologies awareness, data literacy skills and institutional support on digital record management practices of librarians in University libraries, Southwest Nigeria

1.6. Significance of the Study

The findings of the study are expected to make significant contribution to theory and practice of librarianship in addition to contribution to the advancement of knowledge towards creation of a better society. The study will also benefit key stakeholders such as Library management, librarians, record managers, library association, government and future researchers.

This study is significant to Library management as it offers a comprehensive understanding of the intricate interplay between emerging technologies, data literacy skills, institutional support, and records management practices. The insights gathered from this research enable library management to formulate informed strategic decisions, enhancing the library's capacity to remain at the forefront of technological advancements.

By grasping the potential of cutting-edge technologies, fostering data-driven decision-making, and optimizing records management protocols, library management can lead the transformation of the library into a dynamic hub of innovation. This study equips library management with the tools to envision, plan, and execute a forward-looking roadmap, ensuring the library's continued relevance, influence, and integration within the evolving academic landscape.

The study will also be significant to the librarians, as it lies in its potential to redefine their roles as knowledge facilitators in the digital era. The insights garnered provide librarians with the necessary guidance to cultivate essential data literacy skills, positioning them as key players in fostering data-driven scholarship. Librarians' awareness and proactive adoption of emerging technologies will enable them to curate and deliver information effectively, enhancing user experiences and enabling meaningful research collaborations. Moreover, the study underscores the pivotal role of librarians in records management, reinforcing the importance of maintaining and preserving valuable digital assets. By aligning with the study's findings, librarians can elevate their professional impact, becoming catalysts for intellectual exploration and champions of digital innovation.

Record managers stand to benefit significantly from this study, which underscores the critical role they play in ensuring the authenticity, accessibility, and longevity of institutional records. The research's insights provide record managers with a heightened awareness of evolving records management practices in the context of emerging technologies. This awareness empowers record managers to design and implement robust digital archiving strategies that safeguard the institution's historical legacy and facilitate

seamless data retrieval. By embracing the study's recommendations, record managers contribute to the preservation of institutional memory and support data-driven decision-making processes, amplifying their contribution to the overall academic enterprise.

Future researchers are a fundamental stakeholder group that can draw immense value from this study. The exploration of emerging technologies, data literacy skills, institutional support, and records management practices equips researchers with a heightened understanding of the digital environment in which they operate. This awareness not only enhances their ability to harness advanced technologies for innovative research but also enables them to navigate complex data landscapes more effectively. Researchers can leverage the study's insights to optimize their engagement with university libraries, accessing a wealth of curated resources and services while contributing to the ongoing dialogue about the integration of technology and scholarship. Ultimately, this study empowers researchers to explore new frontiers of knowledge, guided by a nuanced understanding of the digital ecosystem's nuances and potentialities.

The study finally would be of benefit to the university understudied. If published, it will help the institution to gain a proper placement in the world university ranking.

1.7 Scope of the Study

The study focuses on emerging technology awareness, data literacy skills, institutional support and records management practices among librarians in academic libraries, South-West Nigeria. The measures of record management are record creation, capture, organisation, Pluralization using the record continuum model. The independent variables are emerging technology awareness, data literacy skills and institutional support.

Emerging technology awareness is measured by perception, comprehension and projection. The submetrics for data literacy skills are novice, advance beginners, competence, proficient and experts according skill acquisition theory. The constructs for institutional support are financial support, technical support, educational support and moral support. The study covers all the fifty-three (53) National University Commission's accredited university libraries in Southwest Nigeria. The respondents consist of 113 librarians from Federal University, 102 from state university, 163 from private university. The respondents for this study are all the three-hundred and seventy-eight (378) librarians that is, librarian II, librarian I, Senior Librarians, Principal librarians, deputy librarians and the university librarians in university libraries, Southwest Nigeria.

1.8 Limitation of the Study

Some of the respondents have negative attitude towards filling the questionnaires especially the google form which slowed down the research a little bit, Also, it was difficult for the researcher to have access to the offices of some university librarians especially the ones in government owned university libraries. Lastly, the financial implications served as a constraint to the study.

1.9 Operational Definition of Terms

Digital Record Management Practices: These are the systematic and organized digital approach of creating, recording, storing, retrieving and disposing/preservation of records within a library.

Record Creation: These are ways through which digital records, data are generated in University libraries, south west Nigeria.

Capture: Data capture is the digital process of collecting paper documents, forms and e-documents, transforming them into accurate, retrievable, digital information, and delivering the information for use and decision making in University libraries, south west Nigeria.

Organise: this is the context with which records are digitally and systematically arranged, accessed and managed by university libraries in southwest Nigeria.

Pluralize: pluralization of records is the way/methods and technique by which ongoing value of records are demonstrated in university libraries in south west Nigeria.

Emerging Technologies Awareness: This refers to the act of being in the know of the ongoing technological innovation such as artificial intelligence, robotics, the internet of things (IoT), big data, web 3.0 and so on among librarians in university libraries, southwest Nigeria.

Perception: this is the act of being aware of the existence of emerging technologies in university libraries in south west Nigeria.

Comprehension: this is concerned with understanding the features, use and benefits of the emerging technologies in university libraries in south west Nigeria.

Projection: this is the ability academic librarians to understand the pros and cons of emerging technologies as they affect their decisions in university libraries in south west Nigeria.

Data Literacy Skills: Data literacy skill is the ability of record managers and librarians to read, understand, create, and communicate data as information via electronic means in university libraries, south west Nigeria.

Novice Stage: This is the first and the preliminary skill acquisition stage where librarians in southwest university libraries lack necessary experiences and limited practical experiences with respect to digital record management.

Advanced Beginner Stage: This refers to the skill acquisition stage where librarians in southwest university libraries gained some experiences and have started to recognize patterns in their work as well as trends in digital record management.

Proficiency Stage: This refers to the skill acquisition stage where librarians in southwest *university libraries are more confident and competent in digital record management*

Expert Stage: This is the stage where librarians in southwest university libraries have a wealth of experience and can perform their tasks almost intuitively.

The Mastery Stage: is an extension of the Expert stage in Dreyfus's model, representing the pinnacle of skill acquisition of Librarians in southwest university libraries at the Mastery stage not only possess an exceptional understanding of the field but also have a unique ability to synthesize knowledge and innovate beyond existing practices in digital records management.

Institutional Support: this refers to the assistance, resources and infrastructure provided by an organization or institution to individuals, projects and librarians in southwest university libraries.

Financial Support: this refers to the provision of the funds and monetary resources to individuals, organizations and libraries to assist them in achieving their goals or fulfilling their financial needs.

Moral Support: This refers to a psychological and mentally encouraging work environment enjoyed by librarians in southwest university libraries, Nigeria.

Technical Support: this is an act of assisting librarians in southwest university libraries, Nigeria in resolving technical issues or challenges related to hardware, software or other technological systems.

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Chapter Two

Literature Review

This chapter presents the review of relevant literature in order to have clear understanding of the study. The literature review for the study is presented under the following sub-headings:

2.1 Conceptual Review

2.1.1 Overview of Digital Records Management Practices

2.1.2 Concept of Emerging Technology Awareness

2.1.3 Concept of Data Literacy Skills of Librarians

2.1.4 Overview of Institutional Support

2.2 Theoretical Framework

2.2.1 Records Continuum Model

2.2.2 Situation Awareness Theory

2.2.3 Skill Acquisition Theory

2.2.4 Institutional Support Theory

2.3 Review of Empirical Studies

2.3.1 Emerging Technologies and Digital Record Management Practices

2.3.2 Data Literacy Skills and Digital Record Management Practices

2.3.3 Institutional Support and Digital Record Management Practices

2.3.4 Institutional Support and Emerging Technologies

2.3.5 Data Literacy Skills and Emerging Technologies

2.4 Conceptual Model

2.5 Summary of the Literature Reviewed

Endnotes

2.1.1. Overview of Digital Records Management Practices

Record management, an essential facet of effective organizational governance, encompasses the systematic and strategic handling of information throughout its lifecycle. It involves the creation, maintenance, retention, and eventual disposition of records, whether in physical or digital formats. Successful record management ensures that valuable information is accessible, accurate, and reliable when needed, supporting informed decision-making, compliance with legal and regulatory requirements, and the preservation of institutional memory. By establishing standardized procedures for categorization, storage, retrieval, and secure disposal, record management minimizes the risk of data loss, unauthorized access, and inconsistency.

In the digital age, the challenges and opportunities of managing vast volumes of electronic records have become increasingly complex. As organizations grapple with the demands of information growth, privacy concerns, and technological advancements, a robust record management system is indispensable in maintaining organizational transparency, accountability, and efficiency.

Records are information that is made, received, and maintained as proof and information by an Organisation or person(s), in conformity with legal obligations or in the performance of business¹. In order to meet operational needs, statutory and financial requirements, and community expectations, records management procedures entail the systematic control of an Organisation's records at every stage of their existence (creation, classification, usage, books, retention, storage, and disposal). Records management methods can help to limit the abundance of worthless reports and documentation². An indication of effective records management practices is the establishment of retention

policies based on an analysis of the records' legal, financial, administrative, and historical requirements and values. Without such regulations, many institutions either erase important data or store everything, putting themselves in risky legal situations and adding needless operating expenses. Managing and controlling documents at all stages of their life cycles, including generation, distribution, storage, usage, and eventual disposal or permanent retention, is the goal of effective records management.

Authors asserted that records management practices offer a number of benefits, such as adherence to legal preservation requirements, speedier information retrieval, space savings, a reduction in lost or misfiled records, and lower expenses for books and equipment^{2, 3}. By meticulously deleting records that have completed their retention responsibilities and, on a schedule, the University library can significantly reduce the amount of space that documents use in the database. By appropriately disposing of records, the need for bookshelves, filing cabinets, and some electronic storage devices can be greatly decreased. To boost the effectiveness of information retrieval, paper records management systems can be improved, while non-paper technologies like electronic document imaging and micrographics may be implemented conveniently and effectively.

An effective university records management strategy requires an inventory of the records retained by the library and the identification of either an existing retention schedule or the design of a new retention schedule that can be applied to those data. The retention schedule, which also establishes the minimum retention durations for each category of record based on the administrative, financial, legal, and historical values of the documents, lists the records that belong to the university. The records should be disposed

off after the required minimum retention time has passed. Physical obliteration, such as burning or transfer to another agency, is an example of disposition. A records retention schedule identifies a group of records and specifies the bare minimum time that the information must be stored before being totally disposed off³.

Furthermore, it has been stated that, it is crucial to manage records since they are fundamental Organisational assets that ensure effective and efficient service delivery in registries⁴. The following list of records management practices is necessary to manage these records; the process of categorizing records in accordance with logically structured standards, practices, and procedural procedures described in a classification system is referred to as classification. In this situation, categorizing records can be seen as a process that entails organizing records in a methodical way⁵. Classification is the "systematic identification and arrangement of business activities and/or records into categories according to logically structured conventions, practices, and procedural rules represented in a classification system⁵. A crucial element in records management is classification. It is used to assign and control retention periods, access rights, and security markings, as well as to link records that come from the same activity or from related activities. It is also used to decide where a record belongs in a larger group of records that are aggregated together.

Therefore, improper record classification impacts how records are kept and has an impact on service delivery because it slows down the records retrieval process. Indexing is the process of figuring out the name, subject, or other captions under which the papers are filed, and an index is a manual for gaining access to records⁶. An index is primarily used to make it easier to find the necessary documents and files. Indexing is a crucial part of

organization's records management practices because it makes cross-referencing easier when records are organized by subject or in numerical order. Therefore, it is expected that pension registries will use an indexing method that is appropriate and compatible with their working environment. Records are essential to all Organization's because without them, it is impossible to conduct current operations, account for all past and future Organisational events, and management finds it difficult to make the right decisions⁷. Records are typically needed to provide evidence, aid in decision-making, and be used for referential purposes. This makes it possible to make wise decisions and guarantees that the sequence of events was well organised and accurately documented.

Keeping or saving records for future use is known as records storage. However, the format or the type of record will determine how they are preserved or stored⁸. While digital or electronic records are maintained on digital media, paper documents are kept in boxes, files, shelves, or cabinets⁹. A functional system for storing records is one that offers adequate protection for both paper and electronic documents. Institutions are therefore expected to choose the best storage medium based on the types of documents they have. File folders, for instance, can be used to store payment vouchers in tangible copies but not memory cards. Records must also be kept in a manner that guarantees their security and facilitates information retrieval with ease¹⁰. To save space and shield paper records from elements of the outside environment that could harm them, careful storage of paper records is also necessary. Electronic records should also be preserved with strong security measures because they are vulnerable to cyber-attacks and information loss¹¹.

Some authors pointed that maintaining records entail more than just keeping them safe; it also required making sure that the records' information was safeguarded, that the proper storage standards were followed, that the records were secure, and that the environment was ideal^{12 18}. It was also pointed out that not all paper documents could be stored in the same way, and the same is true for electronic records¹³. Registries and records managers as well as librarians must therefore make sure that all records are preserved appropriately depending on their uniqueness. Most organisations, including ministries and universities should adhere to customary principles when it comes to security. The majority of safety precautions are taken for the physical security of records, including locking cabinets, hiring security guards, using cameras, closed-circuit televisions (CCTVs), alarm systems, fire alerts, and protection systems. On the other hand, safeguarding the integrity, correctness, and reliability of electronic records is done using techniques like firewalls, passwords, encryption, security copies, and access privileges for each user type. Vital records are typically kept in a secured, secure area to prevent loss, alteration, or usage by unauthorized individuals. Record managers must therefore make sure that all records are protected from physical harm as well as unauthorized access and modification.

A scholar opined that of the considerations Organisations must make about records management is whether to keep or throw away records. Maintaining records required proper disposal of records¹⁴. A researcher in his work, concluded that institutions must have retention and disposal schedules that follow their records management policies¹²⁷. For instance, registries, record managers and librarians or any person shouldered with the are expected to abide by any records retention requirements outlined in the records management rules, such as a five-year retention period. Poor recordkeeping procedures

hinder the effectiveness of service delivery; hence it is crucial for an institution to assess or audit its current recordkeeping program to ascertain if it is efficient or not¹⁵. Institutions can improve their capacity to evaluate their records management methods as they work to satisfy the demands of pertinent stakeholders by routinely assessing their current recordkeeping procedures¹⁶. As a result, record managers like librarians, are required to routinely examine or audit their current recordkeeping procedures in accordance with the suggested principles and to take corrective action where errors, discrepancies, or gaps are found.

According to the Records Life Cycle Model, records are seen as an analog of biological organisms, which are created, maintained, and used for as long as they have continuing value until being disposed off, either by destruction or archival. The records life cycle model's attributes suggest that it is more useful and appropriate for Organisations managing paper records. Researchers have demonstrated that the life cycle model is inappropriate for Organisations or studies looking at the management of electronic data. The records continuum model was created as a result of the perceived flaws in the records life cycle model. Australian archival theorist Frank Upward created and popularized the records continuum model in Australia in the 1980s and 1990s¹².

The approach is Canadian in origin. The continuum model views records as a continuous process from creation to disposition, without a distinct break in the process as records move from one phase to the next. The records continuum paradigm unites archivists and records managers under an integrated framework for recordkeeping with the shared objective of ensuring the dependability, authenticity, and completeness of records¹⁷.

These ideas direct the record-keeping procedures in pension registries for both paper-based and computerized records.

It was opined that, since all institutions produce or generate records at some point in time, records management procedures are essential to the overall administration of records ⁵⁶.

The way in which records are handled is crucial because they enable institutions' decision-making, accountability, and transparency⁸⁷. To enable the effective management of records in institutions, this demands for appropriate records management procedures. Through the Ministry of Public Service, the government of Uganda has made conscious efforts to enhance records administration inside the public pension office. In order to direct records management practices within the public pension office, the Ministry of Public Service created the Registry Procedures Manual 2016 and assisted in the passage of the National Records and Archives Management Act 2017 and the National Records and Archives Management Policy 2020. Despite these developments, it was noted that the public pension office struggled to locate some files, which led to a delay in processing pension payments¹⁸. This made it necessary to evaluate the public pension office's records management procedures.

Furthermore, efficient records management procedures support appropriate judgment and prompt service delivery in public pension offices¹⁹. Personnel records, verification forms, retirement notices, pension payment orders, pensioner files, payment vouchers, and payment receipts are only a few of the documents kept by public pension offices¹⁴⁵. The aforesaid records and other records are managed in accordance with the records management practices. The method that documents are categorized, kept, tracked, indexed, retained, or disposed of is included in records management techniques²⁰. Public

pension registries that don't adhere to good records management procedures face issues like missing files, erroneous records, delays in records retrieval, and space constraints, all of which impair service delivery²¹.

Following effective records management practices is crucial for public pension offices like Uganda's state pension office²². The government ministry in charge of providing strategic and administrative leadership on all issues pertaining to human resources in Uganda's public service is the Ministry of Public Service (MoPS)²³. The development, management, and administration of human resource policies, management systems, processes, and structures for the public sector are its primary responsibilities (MoPS). The ministry's primary services include developing and implementing policies, managing compensation (pension and wages), and providing training through the Ugandan Civil Service College (MoPS). For the purpose of carrying out its duties, the ministry is divided into various departments, some of which include the Department of Human Resource Management, the Department of Records and Information Management, the Department of Performance Management, and the Department of Compensation. Two departments were taken into consideration for the study because it was specifically focused on the public pension office's records management procedures. These were the Department of Compensation and the Department of Records and Information Management.

All records and information management activities at the MoPS are under the supervision of the department of records and information management. The Department of Records and Information Management is mandated by the MoPS to "establish and promote efficient, economical and effective records and information management practices in the

Public Service; and oversee the preservation of the documented heritage for Uganda's posterity." These two tasks also serve as the general goals of the project. The department of compensation, on the other hand, has the responsibility to "provide policy direction, supervision and technical support for the efficient and prudential management of the wage bill, payroll, pension and gratuity in the Public Service"²⁴. It is in charge of monitoring pension records at the Mops and disbursing retirement benefits. The management of pension records is the responsibility of the pension register, which is a part of this department. The Department of Records and Information Management directs and influences its records management operations. Therefore, both the Department of Records and Information Management and the Department of Compensation, which houses the pension registry, play a crucial role in how pension records are managed in the pension registry at the MoPS. Efficient records management practices are required for the management of pension records.

In a study conducted by researcher on the adoption of records management practices in government institutions in Nigeria²⁵. It is revealed that, governmental institutions and ministries need records to function successfully and efficiently and to be accountable to their workforce and the society they serve. Records are a crucial Organisational asset. A company that has a strong foundation of tried-and-true records management procedures will be able to: preserve the right information for the right amount of time; quickly and inexpensively comply with legal requirements; control and manage records management storage and destruction; and preserve key information for business continuity⁸. However, the operation of Uganda's public pension office has been hampered by inefficiency and ineffectiveness as a result of the numerous complaints that recipients file regarding the

delivery of services. Beneficiaries frequently complain about receiving their benefits' feedback too late. The processing of public pensions is delayed as a result of lost and misplaced records, slow retrieval of the necessary information from custody, and delayed feedback^{26, 27}.

Records management practices is concerned with the systematic analysis and control of recorded information, including any information generated, acquired, maintained, or used by an organisation and its mission, operations, and activities²⁸. Additionally, records that are well managed, Organised, and monitored guarantee effective and efficient updates to Organisations, which translate to service delivery²¹. A records management policy that specifies the actions for which records are created and the directions for how many copies should be made serves as a guide for creating²⁹. This guarantees that crucial records management actions are not missed when creating records, preventing the generation of unneeded records³⁰. Records are made because they are necessary for Organisational transactions as well as a number of Organisational goals, including informing Organisational activities, policies, choices, and processes³¹.

Additionally, records offer the data needed to safeguard the institution's financial rights as well as the legal and personal rights of those who are directly impacted by the unit's operations³². Records management procedures frequently assist in effectively managing the creation of records, and if records management is ineffective at the time of creation, it can result in redundant records, a lack of clearly identified official copies, and insufficient records for audit and litigation³³. According to the literature analysis, higher educational institutions' records management systems and associated problems have received the bulk of attention in prior research on records management practices and service delivery³⁴.

Studies on records management methods with a focus on records generation and service delivery paid more attention to public higher education institutions than private ones. Apart from the context of Uganda, the majority of other studies also concentrated on other developing nations including Kenya and South Africa³⁵.

Universities engage in a variety of academic and administrative tasks that result in the creation of records that serve as proof of the tasks completed and ultimately serve as the institution's corporate memory³⁶. The hiring of employees, student enrollment, the purchase of goods and services, payments, assessments, meeting minutes, and the awarding of academic prizes are some of these activities. The majority of records currently created are in electronic format due to the increased use of information and communication technologies (ICTs) in the workplace brought about by the various e-government initiatives taking place in many countries, including Malawi - a developing country according to the World Bank⁸. When records are well kept, universities may make decisions quickly, which promotes strong corporate governance³⁷. Furthermore, in the case of publicly supported institutions, good record keeping processes support transparency and accountability in decision-making with regard to both internal governance structures inside universities as well as broader populace considerations³⁸. Therefore, it is essential that all records, regardless of medium (print or electronic), be made, kept, and used in line with reliable procedures.

Information and Communication Technologies (ICTs) are essential for implementing e-government programs, as has already been mentioned, which in turn creates management of electronic records. Public universities in Malawi have the ICT infrastructure required for the generation and maintenance of e-records,. While servers, Internet access, PCs, and

smartphones were mentioned, as some of the Information and Communication Technologies available, lists emails, websites, intranets, and institutional repositories as some of the Information and Communication Technologies infrastructure resources that are currently in place^{22, 39}. The study concluded that public universities in Malawi were lagging behind their counterparts in South Africa in terms of using Information and Communication Technologies despite acknowledging the existence of computers, digitizing equipment, and institutional repositories at Mzuzu University and the University of Malawi as Information and Communication Tehnologies that could assist in the management of e-records. The two academics ascribed this in part to inadequate management assistance. Information and communication technology (ICT) accessibility suggests that e-records are produced in Malawi's public universities. It is unknown, nevertheless, how extensively Malawi's public universities are using the existing ICTs for e-record generation and administration.

There is literature on e-records management practices, but many of those studies were conducted in fields other than higher education, including the mainstream civil service and other Organisations^{40,3,7}. The limited studies that have already been conducted in this field portray a bleak image of the state of e-records management in universities, nevertheless⁴¹. One significant study that emerged from the literature review provides more insight into the state of e-records in public universities not just in Malawi but also in South Africa⁴². University of Cape Town (UCT), University of the Western Cape (UWC), University of Johannesburg (UJ), University of the Witwatersrand (Wits), all of which are in South Africa; University of Malawi (UNIMA) and Mzuzu University

(Mzuni), both of which are in Malawi; were all the subjects of collective case study that looked at record management practices in six universities⁴³.

The study's findings revealed significant differences between institutions located in South Africa and those based in Malawi in terms of records management methods. Most significantly, it was found that South African universities had made significant technological investments, with two of the four universities having Digital Records' Management in place. There was no such investment in Malawi. The universities in South Africa are now able to create and manage primarily electronic records because to this investment.

Contrarily, the study identified the existence of personal computers and local area networks that supported the development of electronic records, despite the discovery that paper records predominated in Malawian universities. The survey also found that classification systems existed in each of the universities it examined, though UNIMA and MZUNI in Malawi had systems based on departments. The survey also discovered that although they were all very sometimes used, all of the universities had repositories that were maintained by librarians, a situation that could be detrimental to proper records management. Also identified several discrepancies in the institutions included in this study's records management units' capacity. Universities in South Africa had competent records management teams, with some of them having had formal training up to the master's degree level, whereas those in Malawi did not, with the exception of sporadic short-term training. In this section, two studies that focused on the higher education market in Africa were also reviewed. The research revealed some promising changes regarding the state of e-records but also significant shortcomings.

One of these studies, undertaken, examined the readiness of three federal universities in Nigeria to manage electronic records⁴⁴. Checklists, oral interviews, and questionnaires were used to gather data. According to the research, Nigerian colleges lack the Organisational and legal foundations needed to maintain electronic data. The study also pointed out the lack of more advanced but equally crucial systems like Decision Support System (DSS), Electronic Document Management System (EDMS), and Online Transactional Processing System (OLTPS), despite the existence of basic equipment for managing electronic records such as computers, scanners, floppy disks, and scanners. The universities were unable to keep up a reliable e-records management system due to the lack of this equipment⁴⁵.

The survey also found that there were no e-records management policies and that the majority of the records management staff lacked formal e-records management training. Other issues that were found to be impeding effective e-records management in the universities under investigation included a lack of standardized file classification methods, the absence of an archival repository and a university archivist, insufficient facilities for managing records, and improper records disposal. The conditions at federal institutions in Nigeria are comparable to those discovered at universities in Malawi¹¹. In both nations, public universities were found to be lacking in ICT infrastructure for e-records administration and human resource capacity.

In order to assess the situation of e-records management practices from the higher education sector in various regions, a study from the Middle East was evaluated. The creation of an electronic records management system (ERMS) adoption readiness framework for higher professional education (HPE) institutions in Yemen was the main

topic of the study by⁴⁶. Twenty specialists from Yemeni HPE institutions who are active in ERMS were interviewed for this qualitative study to gather the data. Findings showed that in order to effectively promote ERMS readiness among HPE institutions in Yemen, it is necessary to have a clear ERMS policy, adequate IT infrastructure, security practices in place, training for the staff members responsible for using and maintaining the system, and a budget set aside to pay for the system's successful implementation. These are the same problems that have been a major focus of the majority of the studies discussed in this section.

2.1.2 Concept of Emerging Technologies Awareness

Information resources that are necessary to meet their user community's information needs. Libraries and librarians can investigate the technology's availability to collaborate and share online databases, electronic journals, online reference tools, web resources, electronic books, etc. since the information sources and resources that are located in various libraries around the world have been packaged in digital formats as a result of digital technologies. The management, operation, and profit-sharing of a business are typically outlined in a written partnership agreement between two or more parties^{47, 48}. However, the term "partnership" in the context of librarianship refers to a cooperative effort between the Library and a third-party institution, person, company, or community group⁴⁹. In ways that are beneficial to both parties, contributions from partner said in providing and/or publicizing events, activities, and practices. Contrary to the mergers and acquisitions that one typically sees as a key corporate growth strategy, where one company either merges with another or is acquired by another, libraries instead aim to forge partnerships in an effort to either expand a practice or service that isn't currently

offered to their users or to address a stalled economy where funding has either been depleted or dissipated.

This project has produced the joint-use library in a number of instances all over the world, when one type of library collaborates with another to offer improved and cooperative procedures and services. Additionally, it has prompted new kinds of collaborations between libraries and other non-library Organisations to guarantee that their purpose of service is essential even in difficult economic times⁷⁰. On the other hand, collaboration is a modern phenomenon that has arisen as a sustainable approach to fostering the growth of both individuals and businesses. This type of human interaction was developed to pool expertise, influence, and resources from individuals across Organisational boundaries in order to address problems that cannot be handled individually. Despite the crucial responsibilities that collaboration plays, there hasn't been much agreement or coherence in defining what it means across disciplines. Collaboration, it is a process that combines working, learning, and sharing and is largely focused on the teaching, learning, and studying activities that take place amongst educational participants and allow for the activation and transfer of knowledge⁵⁰.

Additionally, collaboration encompass cooperation or any deliberate endeavor to work together amongst institutions⁵¹. It is important to keep in mind that genuine collaboration frequently entails a larger partnership where the collaborators strive to achieve particular or common goals⁵¹. The terms partnership and collaboration are frequently used synonymously in the field of library and information science to refer to the sharing of resources between two libraries or among a group of libraries. Particularly in university libraries like university libraries, the significance of collaboration between librarians and

academics in promoting students' academic success and research capacity has been acknowledged more and more recently. No Organisation, body, or library is able to hold all the information needed by modern civilization due to the proliferation of digital information. Libraries must and should ensure that everyone has full access to its information resources, including those with impairments, people who live in remote or rural locations, and people who are less well off financially. For collaborating libraries, collaboration and partnership can therefore lead to shared resources, shared responsibilities, cheaper costs, and improved outcomes⁵².

The start of a new revolution is Industry 4.0 also known as emerging technologies. The emerging technologies are combination of cutting-edge production processes and intelligent technologies that interact with both individuals and Organisations². The executive chairman and founder of the World Economic Forum, Klaus Schwab, coined the phrase "emerging technology," which denotes a society in which people move between online and offline reality while using linked technology to aid and control their lives⁵³. The emerging technology is the fusion of the physical, digital, and biological worlds. The Internet of Things (IoT), genetic engineering, quantum computing, robotics, and other technical advancements are all included into it⁸⁰. It serves as the impetus for a wide range of products and services that are swiftly becoming into requirements for contemporary existence. In the 20th century, no one could have imagined a voice-activated virtual assistant like Apple's Siri, tailored Netflix recommendations, or Facebook's capacity to identify your face and tag people in a friend's photo. All of these are made possible in the twenty-first century with the aid of the advanced and cutting-edge technology linked to the emerging technologies⁵⁶.

Klaus Schwab, the founder and executive chairman of the World Economic Forum, asserted that as we move into the emerging technology era, there are megatrend drivers in the physical, digital, and biological environment that are upending conventional wisdom regarding human lifestyle, industrial production, and governmental policies. The corporate environment, the effectiveness of government services, and mass advancement or reversal effects in some nations are also significantly impacted^{5,6}. Connections between humans and machines are accelerating dramatically in the emerging era. More data is being gathered and used than ever before⁵⁴. Automation of all trades, mobile computing, machine learning, and artificial intelligence have become necessities of the day. The majority of people believe that these changes are uncommon. Similar and simpler procedures, such the use of robots and RFID technology in some university libraries, can be found in libraries. On demand, users can borrow books, and users can download bibliographic record data from the storage. This type of application, which is more modern for libraries, is recognized as the industry's top technology. Such advanced technology is considered to be a part of more recent industrial revolutions. The application of industry 4.0 technology in libraries to perform routine chores for its users looks to be possible⁵⁷.

Emerging technologies refer to innovations, advancements, and developments in various fields that have the potential to significantly impact and transform societies, industries, and the way we live and work. These technologies are often in the early stages of adoption but show promise for widespread use and influence in the near future. Emerging technologies can span a wide range of sectors and applications. Examples includes Artificial Intelligence (AI) and Machine Learning, Blockchain, 5G network, Internet of Things (IoT), Augmented Reality (AR) and Virtual Reality (VR), Biotechnology and CRISPR, Quantum Computing, Robotics, 3D printing, and Renewable Energy Technologies and so on⁵⁵. It is evident that the concept emerging technologies is a relative word

that can be used to explain technological innovations that are newly been integrated into the society. Moreover, geographically, what is emerging in some places might have been in used for long in some places based on the pace at which each country is developing. To the developing nations like Africa, so technological innovations that are just been embraced has been in vogue for long in some developed nations of the world.

Emerging technologies, also known as the 4th Industrial Revolution technologies, is the beginning of a new revolution characterised by a merger of cutting-edge manufacturing techniques and intelligent systems that interact with Organisations and people, as mentioned in the literature⁵⁶. The emerging technologies have frequently been referred to as a new industrial stage where a number of developing technologies are combining to offer digital solutions. In order to collect and evaluate data in real time, emerging technologies use digital technology^{56, 57}. One of the main issues in this new industrial stage is the emerging technologies concept's extraordinary complex technology architecture⁵⁷. Because of this, emerging technology implementation is still being worked on. The emerging technologies are supported by a wealth of recently created, cutting-edge technologies that any business or profession can adopt and use to boost production or service delivery. These are the well-known emerging technologies:

IoT (Internet of Things), Numerous businesses have been affected by the Internet of Things (IoT), which aspires to connect the physical and digital worlds. There are now hundreds of millions of connected devices, and more are developing intelligence. Internet of Service (IoS), By integrating products, processes, and services to create intelligent services, industry is quickly "refining" these elements. For both IT service providers and clients, internet-based services provide tremendous growth potential. For instance, these services can result in modifications to product portfolios, the optimization of the operation of an industrial

plant using new knowledge platforms, and the virtualization of ICT infrastructures—all while taking IT security into account.

Robots, as robotics advances, business relies heavily on these machines, which are created specifically to interact physically with people in collaborative settings. Cobots are made to work alongside people, not to replace them. Cobots, also referred to as people-focused robots, are capable of creating and enhancing the work that humans accomplish. The robot can perform dirty, hazardous, boring, laborious, or repetitive activities so that people can concentrate on other responsibilities. They increase productivity and, among other things, free workers from exhausting and dangerous tasks.

Augmented reality (AR) and virtual reality (VR), These technologies, which employ computer science to merge the physical and digital worlds, enhance users' and customers' visual experiences by creating immersive environments. The user can experience augmented reality (AR) as a digitally enhanced or augmented version of the real environment⁵⁶. By isolating the user from the real-world experience, VR, on the other hand, completely substitutes it with a completely synthetic one. Since virtual reality (VR) requires total immersion, the outer world is completely blocked out. Big data technologies are software instruments that analyze, process, store, and extract data from extremely large and complex data sets that are too challenging for conventional management systems to handle. The full-fledged emerging technology will allow us to convert data into knowledge since knowledge is power. Big data makes it possible to handle and comprehend vast amounts of data for commercial purposes, which is crucial when developing corporate strategies or making decisions⁵⁷.

3D printing, also known as additive manufacturing, is a process for layer-by-layer construction of three-dimensional items using a computer-generated design. The additive process of 3D printing, which includes adding layers of material, creates 3D objects. Using 3D printing, a whole thing is separated into countless tiny slices, and the object is then built slice by slice. These tiny layers bond together to form a solid object. 3D printers are able to include moving parts like hinges and wheels into a single product because each layer is so intricately detailed. On the other hand, 4D printing makes it possible for 3D-printed objects to change shape. The term "4D printing" refers to this additional fourth dimension. Modern software, engineering, and material science are combined with 3D printing techniques to create emerging 4D technology. 4D printing makes use of industrial 3D printers, such as the Polyjet printer. These printers need "smart" ingredients like hydrogel or shape memory polymer as input rather than conventional materials. These intelligent materials have the ability to alter their shape based on their thermo-mechanical properties⁵⁵.

Cloud Computing (CM), A relatively new system logic, cloud computing provides the customer with a significant quantity of storage space. These tools are available for usage by companies and individuals for a modest price. The cloud storage solution will keep machine data functional, enabling production systems to be more data-driven even as technology performance advances over time. During the industrial revolution, there will be more data transmission between locations for tasks related to production, allowing for a reduction in business limits. A lot of Organisations are starting to take cloud computing into account when they develop their data systems. Though historically software has not been kept in the cloud, more and more apps are being developed there.

Additionally, the emerging technology era is characterized by technologies including 3D printing, sensor technology, artificial intelligence, robots, drones, and nanotechnology⁵⁶. On the other hand, Deloitte asserts that many of these technologies are not novel and were developed 20 or 30 years ago. However, the author explains that recent huge increases in processing power, cost reductions, and shrinking. The discussion of the various emerging technologies are as follows: Cyber-Physical System (CPS), Internet of Things (IoT), Internet of Services (IoS), Big Data and Analytics, Augmented Reality, Autonomous Robots, Additive Manufacturing (3D Printing), Cloud Computing (CM), and Simulation. These technologies have been shown to be actively contributing to the emerging technological era, providing equal chance for many enterprises to benefit from and increase output. The cloud computing is one of the emerging technologies that is particularly beneficial for partnerships and collaboration among academic libraries.

The "cloud computing" technology uses the Internet and centralized remote servers to maintain data, software, and applications. In other words, it is a computing model where elastic and scalable IT-enabled skills are made available to external clients as a service over the Internet. With several opportunities to combine their services with clouds, it was designed as a godsend for libraries⁵⁸. Cloud computing makes a shared pool of resources, such as networks, computer processing power, customized user and business applications, and data storage space, available. It attracts and is used by several companies and institutions, like Google, Yahoo, Microsoft, and Amazon, among others, for infrastructure solutions. Libraries are not excluded.

Cloud computing makes use of a variety of technologies, including utility computing, grid computing, unified computing, web 2.0, service-oriented architecture, and others¹²⁸. A

network that is housed in the cloud is referred to as cloud computing. Instead of having resources and services on local servers, nodes, or individual devices, it is a sort of computing technology that makes it simpler to share them across the internet. Many libraries all around the world are adopting and employing cloud computing technology to build partnerships that can lead to collaboration and resource sharing because of its capacity to provide a common pool of resources.

The Scientific World claims that libraries and librarians can share scattered resources and services that are owned by numerous businesses or regions through the use of cloud computing⁵⁹. As participating libraries store their resources in the cloud and share passwords with other participants, cloud computing technology has emerged as a practical tool for partnerships and collaboration among libraries because it can offer a sizable pool of resources without the restrictions of physical storage. In order to make fresh resources and cutting-edge services available to their customers, libraries today are utilizing cloud computing technologies to grant access to resources and services that they do not own. The cloud computing platform makes it easier for libraries to find and share scholarly content⁶⁰. It serves as a collaborative platform that empowers libraries to enable dynamic searching as well as single point search interfaces, maximizes the use of all e-resources, and performs customized searches across a set of sources to cut down on noise and highlight pertinent content and tools to support the entire research lifecycle. Cloud computing technology is quickly developing into a collaborative platform for users and researchers to find and access millions of journal articles, patents, and e-books, as well as for the users to tag as well as share and discuss these contents with their peers.

A few of the companies that offer cloud computing applications and their applications that are helpful for partnerships and cooperation in libraries are: Webscale from OCLC which is a wonderful example of how to use cloud computing for libraries. Because they offer cataloguing tools through the Internet and permit member institutions to access their centralized data base, OCLC has been acting as a cloud computing vendor. World Share Management Services (WMS), a library management system, has been put into practice by OCLC. This service covers a wide range of topics, including licensing management, resource sharing, analytics, and resource procurement. It provides a cloud-based application for managing the complete library collection. Webscale's primary goals are to make it simple for libraries to share their information, innovations, and resources.

Ex-Libris Cloud, The well-known American supplier of library software Ex-Libris. It provides cloud-based solutions to automate library operations. The majority of its products were first developed for locally implemented solutions, and hosting environments were only later added. Ex-Libris solutions are utilized by more than 5300 libraries in more than 80 countries to automate their library resources, according to their website. By adding new services, it helps libraries to improve productivity, save operational costs, and boost value. It has changed the way that conventional library resource management is delivered through the Alma library-based system. Using a centralized cloud service and installing software permits libraries to easily impact the community's cooperative efforts to produce efficient services for their users, in addition to generating significant overall cost savings⁶¹.

DuraCloud which offers turnkey projects for Organisations and libraries to enable them to exchange scholarly material utilizing Fedora Commons and DSpace. Duraspace also offers open source repository solutions. It is especially committed to maintaining and

advancing Fedora and DSpace. For IR solutions, these open source repository options are well known. Its latest offering, DuraCloud, offers libraries simple and affordable cloud-based support services for digital preservation. To reduce the danger of data loss, DuraCloud assists libraries in moving content to the cloud and storing it with various service providers. Online backup, preservation and archives, media access, online sharing, and cloud broker are just a few of the cloud solutions available.

OSS Labs, The Indian company OSS Labs uses Amazon's elastic cloud computing platform due to its many features, including high data durability, strong information security based on ISO standards, and flexibility. To meet the needs of picky clients, it is anticipated that the OSS laboratories would be able to offer reliable open-based solutions. Koha ILS and DSpace IR hosting and maintenance services are provided by OSS Labs. Cloud services from Mazon are used by OSS Labs. The cost of running a library has significantly decreased, and staff members no longer have to worry about software updates, etc.

The libraries that were evaluated had difficulty providing information services to people with disabilities due to a shortage of computers and assistive equipment¹¹¹. The majority of libraries did not offer assistive technology for use by people with visual impairments, such as screen magnification software, screen readers, Scanning and Reading Appliance (SARA), Daisy, and digital recorders⁶². The lack of assistive technology and gadgets prevented people with disabilities from using the National Capital Region Libraries to obtain information⁴¹. The majority of libraries in higher education institutions in India lacked basic assistive technology and equipment to allow people who are visually impaired to access information³². In the context of Africa, the Sudan-based study revealed that the visually impaired pupils had trouble accessing information services due to inadequate assistive

technology and a lack of training in their use¹. Similarly, the absence of computers, assistive devices, and computer literacy skills made it difficult for visually impaired students to access material in university libraries in Nigeria⁶³.

In a similar vein, the libraries of Plateau State Special Educational Institutions lacked the essential assistive technologies and gadgets, including screen readers, Close Circuit Television (CCTV) magnifiers, scanners, and text-to-speech software⁶⁴. University libraries in Meru County, Kenya, are lacking in assistive technology and equipment such as wheelchairs, text-to-speech software, TDDs, and magnifying glasses⁶⁵. To take advantage of the opportunities and advantages that emerging assistive technologies offer, libraries must investigate and adopt them. Assistive technology may help people with disabilities access their human rights, develop digital literacy, finish their education, find and keep jobs, and live happily in their communities⁵⁶.

Greater technology advancement is giving people with disabilities a great deal of independence in the emerging technology era. In all fields, economies, and sectors, a variety of new technologies that combine the physical, digital, and biological worlds have arisen⁶⁶. Artificial intelligence, robots, virtual reality, and the Internet of Things (IoTs) are a few of the technologies that have a significant impact on the lives of people with disabilities⁶⁷. Autistic people can better remember tasks and control their anxiety thanks to the development of advanced assistive technology like the Brain in Hand autism support app²¹. Additionally, virtual reality (VR) initiatives are supporting people with special needs, particularly those with visual impairments, to adapt to certain situations²⁷. Telepresence robots for people with motor disabilities; and VR projects. University libraries can greatly benefit from

these technologies by fostering environments that are more inclusive of people with disabilities.

Additionally, references in the literature especially mention how responsive libraries have been to the emerging technolog⁶. Emerging technologies have had a significant impact on libraries, and their ability to adhere to its design principles will determine whether or not they can continue to exist⁶⁸. In agreement, warns against the danger of reading and responding to the emerging technology from a conventional and well-known "library" perspective⁶⁹. For any traditional librarian, it is tough to submit to a cyber-library reality, but he goes on to emphasizes that libraries have always been flexible and adaptable. Although libraries are reactive in their response to the 4IR and consequently also disruptive change, both affirm that libraries do have a realization of the necessity to "adapt or die"⁷⁰. The 4IR idea does not frequently appear in literature about university libraries, but it is clear that there is growing evidence that study on the 4IR in relation to libraries is necessary.

Many authors have confirmed that libraries are quick to adopt new technology and there are numerous examples of emerging technology-related technologies being adopted in academic libraries. These technologies include the Internet of Things, embedded systems, cyber-physical systems, big data, cloud computing, information management, data acquisition and handling, as well as network security, among others. The awareness and adoption and use of emeing technology (robotics, user experience, ask-a-librarian, social media, reference management tools, e-Resources, Research Commons, Wi-Fi access) by libraries in Africa is commendable and shows the LIS sector's growing commitment and intention to adopt technology to address disruptive change and to realize SDGs. To be in alignment with the

emerging technology's design principles and aims, libraries must continue to conceptualize, plan for and embrace the emerging technology in a comprehensive and sustainable way⁷¹.

This suggests that while developing an ICT strategy for the emerging, countries need to take into account their entire book publishing and LIS environment. Without taking into account the larger book publishing and LIS ecosystem, the adoption of emerging technologies will result in a fragmented approach to the emerging technology, require duplication of efforts and resources, and have no positive impact on the attainment of SDGs. Libraries must be aware that both the emerging technology and disruptive change have had a significant impact on their customers' wants and expectations.

Libraries must move to a digital ecosystem in which the entire LIS sector is integrated and where the participants and stakeholders in the publishing and LIS sectors serve as nodes⁷⁰. Integrating the many nodes within the LIS ecosystem will make it possible to connect diverse technologies and generate big data about publishing of content, library users, and collections across the board. The goal of an inclusive user-centric one-touch experience within the LIS sector will only be realized when the design principles of the emerging technology relating to inclusivity, inter-linkage, and interconnection have been considered and addressed⁷². Authors in the LIS sector supports the findings of the management literature when they caution against adopting and implementing technologies to facilitate the introduction of a user-centric one-touch experience without taking into account the wider context of the Organisation. This is in addition to an ICT strategy that guides the adoption and implementation of emerging technology within a wider ecosystem.

Discussing the adoption and implementation of emerging technologies in the library, the study recommended that, libraries must take into account all potential areas of impact that could

affect the successful adoption and implementation of strategies and technologies related to the 4IR, according to a number of authors⁵. These revamped organisation models, re-organised workflows for employees processes in libraries, and Organisational behavior are all areas of effect. More importantly, a comprehensive and long-term ICT strategy related to the emerging technologies can only be realized through careful consideration of a training and development strategy and plan that supports the incorporation of new and different roles and positions within the library's Organisational structure. Additionally, it was emphasised that the use of cognitive technology will make it easier to conduct semantic searching in addition to keyword and descriptor searches for information⁷³.

By interacting with chatbots and other intelligent assistants, users can be directed to similar content or even subject matter experts and communities of practice. Semantic searching makes sure that users comprehend the content's larger context. Using cognitive technology will make sure that the client's attention is more focused on the content itself than on the carrier or container of the material. As a result, assures that the client's contact with the libraries can be regarded as conversational and, as a result, permits "learning" as opposed to being restricted to search and retrieval. A cloud-enabled ICT environment is required for the adoption and application of emerging technologies. Big data from devices, people, and systems, as well as the physical world, is analyzed by the cloud and made actionable. Decision-making that is accurate and well-informed in "real" or actual time is made possible by integrating big data across the full publishing and LIS value chain or ecosystem. Additionally, the cloud offers increased computational power, lowers the cost of storage, and offers a dependable platform for storage⁷⁴.

2.1.3 Concept of Data Literacy Skills of Librarians in University Library

This emphasis on research data and the need for data literacy training for researchers is found in academic literature⁶². Data literacy has become a unique skill set for mastery with origins in media literacy, visual literacy, scientific literacy, and statistical literacy⁷⁴. We can see from the range of phrases and definitions used to describe it, however, that the concept of data literacy—how it is defined and what core abilities are required—is not yet standardized. The study found three alternative approaches to data literacy in the literature: data information literacy, research data literacy, and scientific data literacy⁷⁵. It is clear that [the terms and definitions each have a different focus," "which tends to reflect the context in which it was derived⁷⁶.

The contextualization used in identifying data literacy skills is clear based on the novice stage which is the first and the preliminary skill acquisition stage. Also, there are Advanced beginners in a library setting that might be more comfortable assisting patrons with common reference inquiries, organizing simple displays, and using basic library software. They still require structured guidance but are beginning to make connections between theory and practice. There is proficiency stage as well, the proficient can manage a wider range of tasks independently and are capable of adapting to variations in their work environment, they possess a deeper understanding of the underlying concepts in digital records management. Proficient librarians can work efficiently without constant supervision and can mentor novice and advanced beginner librarians.

There is also expert stage, the experts have a deep understanding of the nuances and complexities of their field. Expert librarians not only handle routine tasks efficiently but also have the ability to innovate, solve novel problems, and contribute to the advancement of the field. They can develop new strategies, design unique programs, and

guide the development of library services. Expert librarians often serve as mentors and leaders within the profession. Lastly there is mastery stage, the masters might publish research, design groundbreaking library programs, and influence the direction of the entire profession. Librarians at the Mastery stage are often regarded as thought leaders and contribute to the development of the theoretical framework of the field⁸².

Data literacy is a subset of information literacy, according to Schneider⁷⁷. Both the SCONUL Seven Pillars information literacy model and the information literacy lens on the Vitae Researcher Development Framework emphasize how important it is to find, produce, and deal with research data in order to determine which information could provide the best material to address an information need⁷⁸. This is because information literacy today goes beyond just published information and underlying data. This is in line with a larger view of information literacy, which acknowledges that research data is included in the definition of information⁷⁹. One author opined that, it seems sense to broaden the definition of information literacy to include data management and curation¹⁷. It was also asserted that individuals with good information literacy abilities should support data-related services⁸⁰.

There has been a lot of work done over the past ten years to define data literacy abilities for graduate and undergraduate researchers. The library and information science sectors are where the majority of this work is coming from. Because it complements information literacy, data literacy is at home in the fields of library and information science. As a matter of fact, the majority of attempts to characterize data literacy skills have either synthesized earlier attempts to identify data literacy skills or produced skills that adhere to the guidelines from the Association of College and Research Libraries' (ACRL)

Information Literacy Skill Standards for Higher Education. The current data literacy abilities tend to complement one another effectively, although they are distinctive in their origin and presentation⁸¹.

In a study conducted on Digital Preservation, the researcher opined that, in order to place data literacy entirely within the conversation about digital curation and data management, developed eight broad research data literacy concepts that align with the ACRL Information Literacy Skill Standards for Higher Education with the Library of Congress' Digital Preservation Outreach and Education curriculum model⁸². This skill set aimed to offer a matrix for curriculum development that could scale to various degrees of data demands. In order to complement the information literacy standards, Calzada Prado and Marzal created a framework of five fundamental data literacy competencies by synthesizing related skill categories⁸³. They have a wide framework that is meant to be applicable across disciplines and to be universal. Calzada Prado and Marzal's skills were intended to define "an understructure on which learning experiences can be built." More thorough skill models for data literacy exist. For instance, one of the initial initiatives resulted in the Institute of Museum and Library Services (IMLS) grant-funded Data Information Literacy Project, a cooperative project involving libraries at the Universities of Michigan, Minnesota, Purdue, and Cornell. Grant partners examined the responsibilities of librarians in teaching those skills after identifying twelve data information literacy abilities from faculty interviews and librarian assessments¹²². However, the abilities were developed from an e-science perspective and are specific to scientific inquiry, even if the researchers advocated broad applicability. A team from Dalhousie University developed what is likely the most extensive set of skills after

reviewing the literature and synthesizing the results into a data literacy matrix that outlines key knowledge areas and includes core, conceptual, and advanced skills as well as related skills⁸⁴.

While the literature frequently focuses on a clearly defined audience for data literacy among graduate and post-graduate researchers, attention has also been paid to adapting data literacy skills to accommodate undergraduate librarians who may need foundational knowledge for undergraduate research, applying to graduate academic, or beginning their careers⁸⁵. Even if librarians choose not to pursue higher degrees, data information literacy skills are still important. The majority of students pursuing postsecondary education in the US aim to graduate with a bachelor's degree. Furthermore, the majority of economic activities today depend on these talents.

Zilinski converted Data Information Literacy Project competencies into competencies fit for undergraduate librarians. The Data Credibility Checklist, an educational tool for introducing data literacy ideas to undergraduates, was developed by the authors from this modified list. Sapp Nelson developed a prototype skill matrix using a more comprehensive approach to data literacy education in order to provide a framework for scaffolding data literacy instruction across undergraduate courses for better curriculum development and long-lasting data literacy practices^{86, 87}.

A scholar concluded that, a concentration on the sciences has primarily shaped how the current data literacy skills have developed. This is hardly surprising given the changes in the management and sharing of research data in higher education during the past ten years. Data literacy requirements, however, have not been as well outlined in some academic and professional fields, such as the arts and business. Customizing talents to various situations

is not always clear, even if certain skills are universal and others are broad enough to be understood in numerous circumstances. This is true for business librarians, who will probably work extensively with proprietary data and explain changes and new directions using both data and statistics. Better business, not better science, is the end goal for business librarians, but both are achieved with honesty, respect for the underlying data, and awareness of the wider implications of data handling⁸⁸.

Although it hasn't yet been widely established, data literacy for business librarians has generated considerable attention. Data was incorporated in classes across all departments, according to an assessment of the syllabi at the Eastern Michigan University College of Business; nevertheless, student interaction with the data varied. The author came to the conclusion that 62% of courses would directly benefit from education in data literacy, but that different courses needed the teaching of different skill sets. A 2016 mapping of business librarian information needs with the Information Literacy Skill Standards also provides some evidence of data literacy needs⁸⁹. The author emphasised that the reader should pay attention to the statements that the reader "is able to identify the sources of public company financial data" and "is able to transfer financial or other data to Excel or other spreadsheet software for further analysis or data manipulation." More recently, Macy and Coates compared the data literacy abilities of the National Standards for Business Education and the findings of an employer needs survey conducted by the Association of American Colleges and Universities⁹⁰. They created learning objectives for librarians that support these abilities, and in collaboration with business academics, they created a workshop for business librarians to aid in the development of these abilities.

However, the majority of the research for business practices appears to come from business faculty and focuses on redesigning curricula or creating new areas of concentration rather than incorporating data literacy skills into all areas of the curriculum. A survey of industry partners to determine the top talents that the workforce needs but that are not taught in business courses⁹¹. The survey was done by the authors to assist them in revising their current courses to add learning objectives for non-analytics business majors in data analytics. But in 2018, Gartner released a trend insight report that was based on a poll of chief data officers regarding the biggest problems their firms were encountering. Poor data literacy was cited by respondents as the second biggest internal barrier to success, barely ahead of "lack of relevant skills or staff" and behind "culture challenges to accept change." According to the study's findings, "A sustained data literacy program addresses all three of these roadblocks"⁹².

Employers expect new workers to have high data literacy abilities, and librarians expect students to gain these skills in academic, as was previously discussed. However, business academics find it difficult to keep up with both librarian and corporate expectations. The addition of data analytics and data science courses and concentrations to business education practices has been one strategy for addressing the requirement for data skills. But not every business academic alum needs to be an expert in data science or analytics. Professional librarians must have a fundamental understanding of data and how it is applied in business settings, such as promotional activities, management, human resources, and branding.

A researcher, classified data literate persons into four groups based on the knowledge and expertise needed to carry out tasks using data. The categories offer a framework for

communicating the varied depths of skill required by individuals depending on the amount to which they engage with data, even though the authors acknowledge that these categories are not exhaustive. Readers "critique and interpret data," makers "ask and answer real-world questions," communicators "tell stories from data," scientists "combine strong technical data skills with communication skills and in-depth knowledge of the domain of the data," and makers "use data as part of decision making". These categories can be used to emphasise the fundamental abilities that would allow a more data-centric approach to be taken in all aspects of an Organisation and to address the various degrees of talents that business librarians are required to possess. Using existing data literacy skill frame works as a starting point, we determined the competencies we believe business librarians need to have the most⁹³.

All managers and librarians need to have a basic understanding of data management. Organisation and storage of data are crucial for company continuity. Revenue is on the line as new employees are employed, departments work together across the Organisation to execute significant projects, and deadlines must be fulfilled. Because disordered file formats waste time and money, data must continuously be accessible, shared, and understood. A fundamental data management skill, organizing data emphasises logical folder architecture, uniform file naming practices, and version control. Finding and retrieving files, collaborating on and sharing files, and maintaining proper control over files to prevent loss or unintentional disclosure all depend on effective data Organisation. Even though many library systems may use a technology that supports organizing, searching, and retrieving files, fundamental Organisation skills are still necessary⁹⁹.

Fundamental data management abilities are distinct from database administration and Organisation, which involves building and implementing high-quality databases. Pan conducted a survey of the advisory boards for the Samford University Business Academic and discovered that 14% of respondents thought database management was a skill that went beyond what was expected of some undergraduate business librarians, 38% thought it was a necessary skill, and 48% thought it was only crucial for data analytics minors⁹⁴. Although efficient communication between business professionals and information technology or analysis specialists depends on a general understanding of database structure, function, and use, not all business librarians are required to have extensive database management skills.

Everyone has a duty in this area, even if maintaining secure storage and deploying efficient backup solutions is frequently the realm of information technology (IT) professionals. Data sharing within an Organisation, preventing data breaches from the outside, and avoiding unintentional data loss due to human or technological mistake all depend on secure storage and backup. Making sure that files are saved on shared drives so that other team members can access them or that IT can do an automated backup is one of a person's responsibilities. People are better able to manage their digital information when they are aware of the real-world repercussions of poorly secured, poorly backed-up data. Understanding the sources, uses, and applications of data is a universal talent, even though data usage in business contexts may differ from that in pure research and academic scholarship activities. This talent, is the "need to understand what data is and be aware of the various possible types of data"⁷.

This talent, which the Australian Bureau of Statistics referred to as "data awareness," deals with issues such as "Are the data relevant and appropriate?" Where did the information originate? How were the statistics gathered? Are the data suitable for the task? This ability equips business librarians with the ability to evaluate the statistics they frequently employ critically. It would be beneficial for employees (and, consequently, business librarians who want to become employees) to understand what forms of data exist inside or are available to an Organisation, where it comes from, and how it is used within the Organisation in light of the emphasis on becoming data centric. Professional librarians should concentrate on what types of data are used for routine business activities and what data are produced by those operations.

The ability to make data-driven decisions is built on this one. As was previously noted, MBA applicants anticipated learning data skills as part of their coursework in order to comprehend how data will influence business decisions. They anticipate learning about the context and accessibility of data within an Organisation in order to comprehend its possible uses there. Business librarians must be familiar with the data that underlies choices about where to allocate staff and resources, for example. They must comprehend data collection methods, types of data that are available, applications for the data they use, and its constraints.

Every skill paradigm for data literacy that was examined contained some variant of data evaluation. This skill was linked to the capacity to "critically assess sources of data for trustworthiness"⁹⁵. The application of evaluation criteria, such as authorship, collection and analytic procedures, and interpretation, was the main emphasis of study. Carlson definition of data evaluation as quality assurance with a focus on data collection or compilation

correctness, consistency, and integrity²¹. The quality of the documentation (annotation/metadata) created and the Organisational structure, or lack thereof, of a given data set might facilitate or disrupt quality assurance, the authors continue. On the other hand, a notable author defined data evaluation as the assessment of data for long-term value and retention. This becomes a crucial skill when taking into account electronic records management, the length of time that specific types of documents must be kept, and the upkeep of a manageable document library.

Business librarians that possess this expertise are qualified to evaluate data for reuse and evaluate the quality, credibility, and trustworthiness of the underlying data sources used for statistics. The basis for data interpretation, data-driven decision making, and data ethics, all of which depend on reliable, high-quality data to support work in an Organisation, is laid by evaluating the quality of data sources. This ability has a strong connection to statistical literacy as well. According to the Australian Bureau of Statistics, statistical literacy "is the capacity to precisely understand, interpret, and evaluate the data that inform these issues⁹⁶.

In order to use data effectively, one must be able to interpret the findings or conclusions that have been presented in order to understand what the analyzed and processed data implies. It was asserted that recognizing and interpreting data problems require two different abilities⁹⁵. Finding "key takeaways and integrating this with other important information" and using "data to identify problems in practical situations" and "grand challenges" are examples of knowledge related to these talents. Manuscript Accepted Condon and Business professionals are better prepared to recommend actions based on data analysis or make data-driven decisions by learning how to understand data. What appears beneficial to data scientists will generally mean little to a sales executive, and the opposite is also true. Data, however, benefits both parties greatly ⁵⁹. Business professionals

need to comprehend the data and the type of analysis that was done on it in order to interpret data effectively, even though it isn't necessarily the same person who performs the analysis and explains what it means.

The organisation must effectively communicate complicated concepts to a variety of audiences with variable levels of topic knowledge and varying intended results in order to derive information from data. Efficient data communication and presentation activities require a variety of abilities⁹⁵. The authors, in particular, add a skill that focuses on verbal data presentation, specifically regarding creating and delivering suitable, cogent, and relevant presentations. Working with visual data representations and visual literacy are included in this ability. "The ability to generate images as well as to interpret images for communicating ideas and concepts" is what is meant by visual literacy⁹⁷. The data visualisation skill is further described by a scholar as involving evaluating "graphical representations for accuracy and misrepresentation of data" critically⁹⁵. Employers want candidates with refined soft skills when hiring new employees. This qualification includes the ability to understand, produce, use, and present meaningful and effective visual representations of data as well as to deliver a clear and cogent narrative about the data.

Data security, online privacy, and the acquisition and use of data that raises ethical concerns have all been frequent topics in the news⁹⁸. Library systems are still plagued by the numerous difficulties posed by working with digital data in a networked and online context. Understanding data, knowing how to use findings, and successfully communicating with it are not enough for librarians. A duty to approach the gathering, interpretation, use, and security of data with ethics and integrity is the basis of all data literacy abilities. Data ownership,

intellectual property rights, appropriate attribution and citation, and concerns about confidentiality and privacy involving human subjects are the foundations of data ethics.

The essential quality of this talent is the "need to be aware of the role of data in society, how they are generated and by whom, and their potential applications, as well as the implications of their use"⁹⁹. Access to data does not guarantee that you have permission to use it; it does not imply that the data are public or that the data were collected with the authorization of the individuals giving the data. Simply because you have access to data does not guarantee that you should utilize it. The data may be skewed depending on how or by whom it was gathered, or its use may have unintended societal repercussions. Professionals in the business world need to be well-versed in data ethics and comprehend the significance of data protection. Lack of understanding in this area or violations of data security and privacy have an influence on a company's reputation and public trust.

To examine the role that librarians can play in integrating the skills into educational environments and library work after establishing both the demonstrated need for librarians to be data literate and outlining baseline skills that the authors recommend be part of the library work during their service delivery in business academic.

More lately, librarians have focused on additional forms of literacy like data literacy, visual literacy, and digital literacy. These additional literacies generally rely on ill-defined fundamental abilities for application since they lack authoritatively established standards. Additionally, librarians are able to spot and suggest tools, materials, and even abilities that scholars may not be aware they require ¹⁴⁴. With the information literacy framework and the data information literacy project in mind, it is wise for the librarian to take the lead in developing the data literacy curriculum for the business academic, acting both as a

provider of knowledge and an advocate for this effort among faculty colleagues. This function, however, cannot be carried out by a single position. To successfully include data literacy into the curriculum, business and data librarians should collaborate with the professors at business academics. It can be challenging to distinguish between data literacy and other literacy and communication abilities, such as communication, information, visual, digital, and statistical literacy. The topic is as diverse as the language academics use to refer to data, information, and knowledge. Data literacy terminology and the setting of research in several disciplines are strongly intertwined. The subject or level of data literacy are not precisely defined by a single overarching idea.

It was that proposed separating the idea of data literacy from the context of learning data-related abilities in the classroom from the context of information workers acquiring data-related skills in the workplace. The former is the capacity to match specific information requirements with hard digital skills (such as proper data processing techniques). The latter is predicated on the idea that after employing data models or other suitable forms of data processing for a period of time, a person who is an expert in a certain profession will eventually have a high level of data literacy in a range of tasks that are familiar to them. Data literacy skills, can be compared to the idea of meta-literacy skills, which refers to a set of soft skills and standardised human behaviour that improves the efficiency of information acquisition and communication. Depending on the educational viewpoint or practical diagnostic of meta-literacy accepted, data literacy may be viewed as a stand-alone competency for an employee or as equivalent to a whole set of meta-literacy skills.

A level of conscious communication that aids in the comprehension of environmental demands is known as meta-literacy. It is referred regarded as "meta" because it frequently

relies on ethical conduct and informative behaviours that make the participant comfortable and effective in the environment. They are always trained within a particular social or professional environment (for instance, academics and librarians in scientific communication). For professionals and practitioners, data-related IT skills are challenging, and they adapt these skills to their communication preferences. Contrarily, in the educational framework we've established, data-related abilities are a crucial component of meta-literacy, right next to information literacy, in which data carriers are purposefully chosen and developed, then customized to meet various communication demands¹²³.

2.1.4 Overview of Institutional Support

Institutional support forms the bedrock upon which the effective functioning and growth of organizations are built. It encompasses a range of resources, policies, and initiatives that an institution provides to facilitate the achievement of its goals and objectives. This support can manifest in financial allocations, technological infrastructure, training and development programs, leadership guidance, and a conducive work environment. Institutional support empowers individuals within the organization to excel in their roles, fosters a culture of innovation, and enhances collaboration and communication. Moreover, it plays a pivotal role in times of change, such as during technological advancements or shifting industry landscapes, by offering the resources needed to adapt and thrive. A robust framework of institutional support not only strengthens an organization's ability to navigate challenges but also serves as a catalyst for its sustainable growth and long-term success.

Institutional support, according to is assistance given to the library and its staff by their parent organisation or employers outside of the core terms of the agreement to improve their well-being¹⁰. This can affect their commitment to the organisation and have a

positive impact on the growth of the library and its collection to satisfy the information needs of its users. The parent institution now has the responsibility of preserving a collection of books or other written or printed materials, in addition to the faculty where they are stored, due to the institutional backing of a library from the parent body. To provide the greatest services to their library users and the broader community, university libraries heavily rely on institutional support in the form of infrastructure, staff training, timely promotion, favourable institutional policy, and the like. One of the reasons two researchers concluded that without funding, most library collections would be relatively small, consisting of items no longer desired by individuals and probably of little value to library users is that funding is regarded as the most important aspect of collection development¹⁰⁰.

The government provides the majority of the funding for public university libraries through the annual institutional budget in order to raise the standard of services offered to the campus community. In contrast, whether or not a budget is set, the owners of private colleges assume responsibility for finances and have last say. Furthermore, despite rising maintenance expenses, an increase in student enrollment, inflation patterns, and administrative expenditures, trends in university education financing in Nigeria showed no progressive growth in the amount of money invested in university libraries. Therefore, it is crucial to understand that poor funding at Nigerian institutions, especially when compared to other rising indices, has a negative impact on academic quality.

Furthermore, an author found that the degree of the institution's commitment to attainable collection development practises, library staff well-being, effective staff development policies, supervisor support, and fair treatment has a significant impact on the perception of institutional support in university libraries¹⁰¹. Institutional support, which would

encourage library staff members to devote themselves to collection expansion and other library duties, does not appear to be a top concern in a country like Nigeria, where many librarians lack enough financial security³. Due to one or more forms of dissatisfaction, such as non-budgeting attitudes except when accreditation is imminent, non-sponsoring of library staff training and workshops, non-provision of study leaves, and so on, library staff, such as acquisition librarians, rarely devote adequate time to pursuing library goals towards collection development practises tasks in their institutions¹⁰². The study found that conferences, workshops, and training didn't receive enough institutional support.

The majority of individuals surveyed 50% said they occasionally get money to go to conferences. Because periodic conferences and workshops are necessary to follow international best practises, this may have an impact on collection development. The fundamental goal of meeting consumers' information needs could potentially be in jeopardy if personnel aren't properly trained⁴. However, a lot of people thought that the institutional policies of the institutions were good. This favourable opinion of the institutional policy may be attributable to additional institutional support that respondents have received. Some libraries are underutilized. since they lack the necessary parent body support, such as facilities, equipment, and conduciveness. In contrast, this is not the case in the private universities' libraries in southwest Nigeria. According to a study, the parent company offers infrastructure services¹⁰. This suggests that institutional assistance is being given to advance the library. The resources needed for collection development are now accessible as a result.

It is vital to note that institutional support offers crucial outside resources that encourage codification, facilitative policies and regulations that safeguard the intellectual property

rights of the traditional community, and rewards innovators by giving them legitimacy. According to some experts, every organisation interacts with its members through facilitative policies and decision-making processes⁵⁶. So, according to authors, institutional support encourages librarians to gather, codify, and preserve traditional knowledge¹⁰³. Furthermore, it is noted that traditional knowledge documentation lacks what appears to be an avalanche of strategies and infrastructure. Without institutional support for the professional competence of librarians in libraries, traditional knowledge cannot be codified. The emphasis on recorded knowledge (conventional knowledge) over unrecorded information technology has been a trend among library and information professionals, but this may be due to a lack of institutional support in the form of funding, staff development, motivation, and policies that facilitate the proper codification of traditional knowledge for preservation in libraries and information centres⁹⁴. Institutional support and work satisfaction are important factors in determining how committed employees are to the company. Due to technological innovation, institutions now confront intense worldwide competition. Reputable managers across a range of institutions are actively looking for ways to acquire a competitive edge, with institutional support and employee work satisfaction playing a key role. In this study, the terms institutional support, organisational support, and perceived organisational support are used interchangeably as they are in the majority of the existing literature¹⁰⁴.

Therefore, institutional support refers to an employee's opinion or idea that the organisation recognises his or her contribution to the Organisation's success and cares about or is interested in his requirements. As an alternative, institutional support describes how employees feel about how much the organisation values their contributions and is

concerned about their well-being. It has been discovered that institutional support has significant effects on employees' job performance and well-being. For instance, according to institutional support theorists employees develop a general perception of how much the organisation values their contributions and cares about their well-being in order to meet socio-emotional needs and evaluate the benefits of increased work effort⁶⁰. The feeling of obligation among employees to support the institution's goals is increased by institutional support, which can take the form of adequate provisions for workers' physical, accommodation, and health wellbeing, career goals, supervisor support in the form of advice and recommendations for additional in-service training when necessary, and fair treatment in the form of reward for extra-role performance, among other things.

An increase in in-role and extra-role performance as well as a decrease in withdrawal behaviours like absenteeism and turnover are some behavioural effects of institutional support. However, the study of institutional support began with the finding that while managers are focused on their staff, the workforce is more concerned with the organisation³⁵. Being highly respected by the institution helps to meet employees' demands for acceptance, esteem, and affiliation. For workers, the institution is a significant source of socio-emotional resources like respect and caring as well as material rewards like pay and medical benefits. Positive employee evaluation by the organisation also suggests that additional effort will be recognised and rewarded. Since institutional support is known as a major factor increasing job satisfaction of employees, it follows that employees take an active interest in how their employer views them. Institutional support is one of the most important institutional concepts that keep employees in the organisation. An improvement in positive behaviours and attitudes, such as emotional and normative commitment and

occasionally continuous commitment, is shown by prior studies to be influenced by institutional support provided by an organisation to its employees²⁴. It has been demonstrated that employee attitudes towards their jobs are influenced by how much institutional support they feel they are receiving from the company. Additionally, it was proven that perceived institutional support, which might take the shape of institutional care for employees' well-being, supervisor assistance, and fair treatment, is significantly correlated with the quality of the relationship between the organisation and its employees⁶³.

Studies of employee attitudes and behaviour have become increasingly important for predicting employees' potential future commitment or behaviour at work. Based on organisational employees' caring behaviour, such as rewarding employees' contributions, promoting employee well-being, and providing opportunities for employees to participate in important organisational decisions, employees' perceptions of the organisational attitude towards their support are formed¹⁶. Such institutional support would ultimately influence how committed or uncommitted workers were to their jobs. Deductively, institutional support fosters sentiments of importance and utility for the organisation, and these feelings enhance individuals' ability to perform on a personal level. The majority of the literature, as mentioned above, has demonstrated how institutional support motivates workers to perform better and more efficiently because they feel that their managers and the organisation are doing everything possible to better both their private and professional lives. Some authors argued that employees will strive to work more and feel more dedicated to the company when they feel appreciated and supported by it, making it difficult for them to leave³⁹. This isn't typically the case with librarians, as studies have shown

that unlike their counterparts in a private corporate system like the oil and related industries, most public sector librarians intend to leave their job if they discover a better one.

It was stated that as a result of lack of institutional support, most public institution librarians exhibit a lack of dedication and commitment to their organisation¹. Some exhibit regret and dissatisfaction, which indicates a lack of commitment, and many plan to leave if they find a better offer elsewhere. According to the relationship between institutional support, job satisfaction, and dimensions of employees' commitment as projected in social exchange and social identity theory, institutional support thus plays a significant role in employees' commitment to the organisation of any type, including libraries/librarians. According to findings, the majority of African institutions prioritise instruction over research. The issue of low finance for institutions in Nigeria is not a recent one³⁹. The Tertiary Education Trust Fund (TETFund) was established in part to address this issue by funding all public tertiary institutions. According to Okojie, TETFund gives public universities an annual intervention of 20m (US\$63,391.60) to support them in a variety of ways, including research¹⁰⁹. In order to improve research and innovation management practises in Nigerian universities, the Nigerian National Universities Commission (NUC) implemented a policy that required all universities in Nigeria to establish research offices with responsibilities for expanding access to and effectively managing external funding³². With this setup, it is practical to ascertain if academic librarians were able to make use of the many types of help offered at their respective universities. However, the TETFUND does not provide coverage for private universities.

According to the National Centre for Technology Management and the Global Development Network, Nigerian universities offer institutional support services at

differing levels across various institution types. However, other researchers have found that access to institutional support for librarians is inconsistent, particularly in terms of research grants and sabbaticals. When compared to other academic staff at the same university, they do not receive the same level of support for their research, the claimed from South-East Nigeria found through their study that academic librarians there weren't happy with the level of support they received for their research. More importantly, it's important to understand the precise assistance that has a positive impact on research output. Despite the importance of institutional support, there aren't many research out there right now that have looked at institutional support for academic librarians in Nigeria. The research assistance provided by librarians in Nigeria has not received much attention in the literature.

Institutional support and job satisfaction are important factors in determining employees' commitment to an organisation¹⁸. Due to technological innovation, institutions nowadays must compete on a worldwide scale. Reputable managers in a variety of institutional types are actively looking for ways to acquire a competitive advantage, and institutional support and employee work satisfaction are key components. In this study, the terms institutional support, organisational support, and perceived organisational support are used interchangeably as they are in the majority of the existing literature.

An employee's opinion or conviction that the organisation values his or her contribution to the Organisation's success and cares about his needs is consequently referred to as institutional support. As an alternative, institutional support describes how employees feel about how much the organisation values their contributions and is concerned about their well-being. It has been discovered that institutional support has significant effects on

employees' productivity, loyalty, and wellbeing. For instance, according to institutional support theorists, employees develop a general perception of how much the organisation values their contributions and is concerned about their well-being in order to meet socio-emotional needs and evaluate the benefits of increased work effort³⁶. Such institutional support would increase employees' felt responsibility to aid the institution in achieving its goals. Examples include adequate provisions for employees' physical/accommodation and health wellbeing, career goals, supervisor support in the form of guidance and recommendations for additional in-service training when necessary, and fair treatment in terms of reward for extra-role performance.

Increased in-role and extra-role performance as well as a decline in withdrawal behaviours like absenteeism and turnover are examples of behavioural outcomes of institutional support. While managers are interested in their employees' commitment to the organisation, employees, on the other hand, are more concerned with the Organisation's commitment to them ²⁶. This was the starting point for research on institutional support. Being highly respected by the institution helps to meet employees' demands for acceptance, esteem, and affiliation. For workers, the institution is a significant source of socio-emotional resources like respect and caring as well as material rewards like pay and medical benefits.

Positive employee evaluation by the organisation also suggests that additional effort will be recognised and rewarded. Since institutional support is known as a major factor increasing job satisfaction and organisational commitment of employees, it follows that employees take an active interest in how their employer views them⁶⁸. Institutional support is one of the most important institutional concepts that keep employees in the organisation. Additionally, when an employee reviews their organisation, they frequently compare it to

their prior institution and prefer to compare their prospective employment position inside the organisation to similar roles within other organisations⁶⁰. The mental process that employees use affects how they perceive their institutional assistance. Employees anticipate certain outcomes from this perception, such as the institution considering their goodness, showing respect for them, and sharing similar values with them. Employees who receive assistance from their employer believe it is because they are valuable workers for their organisations. Employees who feel valued and appreciated by their employer are equally satisfied with their work and emotionally linked to their employer on affective, normative, and continual levels.

According to earlier research, institutional support provided by an employer to its employees leads to an improvement in positive behaviours and attitudes including affective and normative commitment, as well as occasionally sustained commitment¹⁷. It has been demonstrated that employee attitudes towards their jobs are influenced by how much institutional support they feel they are receiving from the company. Additionally, a scholar finds that perceived institutional support, which might take the shape of institutional care for workers' wellness, supervisor assistance, and fair treatment, is significantly correlated with the quality of the relationship between the organisation and its employees²⁹. Studies of employees' attitudes and actions have become increasingly important for predicting future commitment or behaviour at work. Based on organisational employees' caring behaviours, such as rewarding employees' contributions, promoting employee well-being, and providing opportunities for employees to participate in important organisational decisions, employees' perceptions of the Organisation's attitude towards their support are established ¹⁵. Such institutional support would ultimately determine the level of

commitment or lack thereof among personnel. Deductively, institutional support fosters sentiments of importance and utility for the organisation, and these feelings enhance individuals' ability to perform on a personal level. According to the majority of the literature, which has been emphasised above, institutional support actually motivates workers to perform better and more efficiently because they feel that their managers and the organisation are doing everything possible to better their working and personal lives.

In a similar vein, it was contended that when employees feel appreciated and supported by their company, they will work harder and feel more devoted to it, making it difficult for them to leave³⁹. In contrast to their counterparts in private corporate systems, such as the oil and associated industries, for example, research has revealed that most librarians working in the public sector have the aim to resign their job if they discover a better one. Accordingly, it was reported that most public institution librarians exhibit a lack of dedication and commitment to their organisation¹. Some exhibit regret and dissatisfaction, which is indicative of a lack of commitment, and many intend to leave if they find a better offer elsewhere. In other words, the relationship between institutional support, job satisfaction, and dimensions of employees' commitment as projected in social exchange and social identity theory suggests that institutional support plays a significant role in employees' job satisfaction and employees' commitment to organisations of any type, including libraries/librarians. On the other hand, the words "job" and "satisfaction" make up the phrase "job satisfaction".

On the one hand, a job is an occupation that a person performs in exchange for payment. It denotes what one does in order to earn consistent compensation or recognition, whereas satisfaction refers to how one feels about things like rewards, relationships, people, and the

level of mental elation one experiences at work ¹⁰⁸. They assert that employees or workforce who are satisfied with their jobs for a variety of institutional reasons, including leadership, pay/salary, coworkers, promotion opportunities, communication flow, and working environment, among others, feel highly committed to their organisation. They also view job satisfaction as the degree of an employee's affective orientation towards the work role occupied in the organisation. In service-oriented organisations like educational institutions like public universities, which must recognise that employees' satisfaction will go a long way towards contributing to their goal of having happy and fulfilled students, job satisfaction and organisational commitment are equally very important to customer or user's satisfaction. As a result, job satisfaction is a topic that is extensively explored in the literature on work and organisations in many fields, including psychology, sociology, economics, and management sciences. This is mostly due to the fact that many experts think that trends in job satisfaction might impact employment situations and organisational commitment, work effort, absenteeism, and attrition.

Additionally, according to some indicators, job satisfaction is a powerful predictor of overall individual well-being¹⁰⁵. It is also a reliable indicator of employees' intentions or decisions to leave or remain in a job, depending on the management styles in place at that institution. In the past, job happiness research has often divided job satisfaction indicators or predictors into two categories called as intrinsic and extrinsic variables. According to a notable author, the interaction of a number of previously mentioned factors—which may be internal or external factors—creates job satisfaction and discontent among employees⁴¹. While hygiene factors (such as pay/salary, communication with coworkers, and work environment), when absent, could result in employees' dissatisfaction but do not directly affect employees'

job satisfaction, motivators (such as achievement, recognition, the work itself, responsibility, and promotion) promote job satisfaction.

Scholars asserts that, improving intrinsic variables (such leadership, work environment, leadership, achievement, promotion, and recognition, among others) can increase employee motivation and satisfaction⁵⁴. Extrinsic factors (whether the task allows the worker to use his or her abilities and initiative), financial factors (fringe benefit, relationship with colleague/coworker support, and communication flow), and organisational factors (employee commitment) have been identified as the predictors of job satisfaction among employees in the place of work. According to Tariq and Nadeem's study on the telecom industry, a variety of factors, including leadership/supervision, salary/pay, job responsibilities, communication, and relationships with coworkers and family, influence an employee's level of satisfaction or dissatisfaction, which in turn affects their level of organisational commitment¹³⁷. Because of this, job happiness is a significant concern for both companies and employees. According to studies, employers win from happy workers since they are more likely to have lower attrition and increased productivity if their staff members have a high degree of job satisfaction¹⁰⁶. The distinction between the two is that job satisfaction only denotes how individuals feel about their jobs and various career-related factors. It reveals how much people enjoy (or despise; are satisfied with or unhappy with) their jobs.

Thus, job satisfaction can be understood as an emotional reaction to a work scenario that cannot be seen but is instead implied and viewed as how people feel about their job and various components of it. Additionally, it refers to a person's attitude towards his or her work as a means of support. Simply put, it refers to how much people (workers) enjoy their

work. Therefore, businesses want their staff to be happy in order for them to be more effective, devoted, and productive⁶⁶. A librarian who is highly content with their employment would have positive attitudes towards their work, whereas a librarian who is dissatisfied with their job would undoubtedly have negative attitudes towards their work. Numerous scholars have examined the impact of employees' job satisfaction on organisational commitment. However, job satisfaction is a difficult attitude to comprehend because a wide range of elements have been found to be its drivers, predictors, or "input-variables," with a variety of "outputs" or outcomes. Numerous surveys on job satisfaction have found that characteristics related to employee happiness (input variables) have a considerable impact on organisational commitment (output variables). As a result, organisations routinely measure job satisfaction as a key feature. Employee responses to their occupations are recorded on rating scales, which is the most popular method of measuring. In this climate, as many developing economies face a more competitive global environment, there is a renewed interest in the level of commitment of the public sector. The focus of initiatives to raise public sector performance/commitment levels is on both individual and environmental factors.

According to a research, employees' dedication to their jobs is influenced by their level of job satisfaction, and happy and content workers are more productive. As a result, employee satisfaction is crucial to an Organisation's success⁵³. It is undeniable that people are more satisfied and devoted to their jobs when they are happier in them. Another crucial organisational consequence that frequently comes from institutional support and work satisfaction is employees' commitment, which is also referred to as organisational commitment in the literature. According to institutional support theory, institutional

support, which is a sign of an Organisation's commitment to its employees, makes employees feel obligated to care about it and to show their own commitment and devotion in return. Institutional activities that demonstrate concern for, fairness to, and care for employees may increase their loyalty to the company. Institutional support should engender a sense of duty to be concerned about the Organisation's well-being based on the reciprocity standard. Employees' affective connection to the personified organisation should increase as a result of the responsibility to trade caring for caring. By satisfying needs for emotional support and affiliation, among other socio-emotional requirements, institutional support should also improve affective commitment. By incorporating employees' membership and role status into their social identity, such need fulfillment results in a strong sense of belonging to the organisation⁷⁹.

Additionally, it was asserted that emotive, continuance, and normative components make up the multidimensional notion of employees' commitment¹⁴. Employees' emotional ties to the company have been defined as affective commitment in this context. As a result, he or she strongly identifies with the organisation and wants to continue being a part of it. They claim that these workers commit to the company because they want to. On the one hand, commitment to continuation has to do with one's awareness of the costs involved in leaving the current organisation, that is, perceiving a high cost of losing membership including economic losses (such as pension accruals) and social cost (friendship ties with coworkers that would have to be given up).

As a result, the employee continues to be an organisation member out of necessity. The idea of having obligations to the organisation based on personal norms and values is known as normative commitment. For instance, if an employer has spent money on

institutional support to train a worker, the worker may feel obligated to work hard and remain with the employer in order to pay back the debt. It might also be a reflection of an ingrained belief that one should be devoted to their organisation, one that was formed before the person joined the organisation through familial or other socialisation processes. As a result, the employee continues to work for the company because it is only right.

Public servants like librarians working in government owned universities hardly devote enough time to pursuing library goals in their organisation or institution due to some form of dissatisfaction; as frequently and collectively protested under the Nigerian Constitution, institutional support and job satisfaction of employees that could lead to high employees' commitment to the organisation seem to be a misplaced priority¹. For instance, poor care and wage/salary agitation dominated the activities of the recently observed World Worker's Day on May 1, 2019, in which the Nigeria Employees Congress (NLC) demanded a minimum wage of 56 000 naira compared to the current payment of 18,000 naira¹⁰⁷. This frequently results in one type of service failure or another in the Nigerian public service system. Under President Olusegun Obasanjo's administration, SERVICOM (Service Compact) was established in 2018 as a result of this condition over time. Its catchphrases include "challenge bad service anywhere, anytime; and do not walk away from service failure"¹⁰⁶.

Despite these localised initiatives, research has revealed that Nigerian workers—including librarians in academic institutions continue to exhibit a low work ethic and a lack of dedication to organisational objectives². This can be as a result of what Yaya revealed regarding academic librarians being regarded like second-class employees in Nigerian academic institutions¹⁷. In support of this assertion, it is cited that, there appeared to be low commitment on the part of library staff because university libraries have been

characterised by mobility and high turnover, which has led to poor performance among library staff^{7, 19}. This might be the result of inadequate institutional support and excessive employee unhappiness, both of which have an impact on employees' dedication to their jobs.

According to the researcher's own observations, there is a lack of institutional commitment to the observation of authors¹. These institutions' librarians exhibit a lack of commitment and dedication to their workplace. Some employees display signs of regret or dissatisfaction even after choosing the field as a career, demonstrating a lack of commitment; many others plan to leave if they come across a better offer elsewhere. All of these attitudes are indications of inadequate institutional support and unhappiness, both of which call for this kind of empirical proof.

The modern librarian is also expected to play a crucial part in the academic community. In order to contribute to the social, political, and economic development of the nation, these roles include teaching, research, and volunteer work. According to two authors, library staff members are expected to be committed to the values and goals of the library in an organisation while performing their duties, fully aware that without commitment from the staff/librarians, the organisation will merely shrink and eventually fold due to a lack of relevant information to gain a competitive advantage in our current competitive world in all fields of human endeavor/engagement in which librarians play⁹⁷.

As a result, librarians continue to play a key role in managing scholarly communication and educational progress. In a similar spirit, a scholar identified the academic or university library as the centre of the learning community, offering a space for students and lecturers to conduct research, develop knowledge, and support the objectives of its

parent organisation⁴³. As a result, academic librarians and other factors like institutional support and work satisfaction play a crucial role in how much bibliographic (information) support university libraries can offer to the university.

Low institutional support may have contributed to the low level of commitment among library workers, which may have had unfavorable consequences such job unhappiness, poor commitment, and withdrawal. If these variables are not properly checked through empirical evidence of this kind, it may have a negative impact on service quality and productivity as well as institutional (public universities) loss of relevance in Nigeria to those in the private sector in the long run. Keep in mind that employees' commitment is the bond between the employee and the organisation and is frequently influenced by institutional support and employee job satisfaction levels. Employees with high job satisfaction in this situation are devoted to the institution, share its values, and identify with its objectives through dedication⁵⁶.

2.2. Theoretical Framework

Every research project has a framework upon which conclusions, recommendations, and decisions can be formed. This template, also known as a theoretical framework, serves as the cornerstone and guide for how the study will be carried out. Libraries need support, better technologies, staff development, and other elements that could affect these anticipated performances if they are to grow the capacity to operate at the highest level and provide quality library delivery together with other academic-related responsibilities. In order to create a framework, this study looked at how libraries in Nigeria are aware of emerging technology, have data literacy skills, have institutional support, and digital records management practices. Two pertinent theories and two models serve as the foundation for

the decisions made to direct the course of the study. The theories are Situation awareness theory, Skill acquisition theory, and Institutional support model and Record continuum model.

2.2.1 Record Continuum Model of Digital Record Management Practices

The Record Continuum Model is a theoretical framework that is highly relevant to records management practices. The Record Continuum Model emphasises the interconnectedness of records and the ongoing nature of their management throughout their lifecycle. It recognizes that records are not static objects but rather dynamic entities that evolve and accumulate meaning over time. This model challenges the traditional view of records as fixed and discrete entities and instead focuses on their contextual relationships and the processes that shape them.

The records continuum model offers a layered, interconnected representation of how records flow fluidly between dimensions. The model is seen as an improvement and step forward from the life-cycle theory's unidirectional characteristics⁴⁸. Notably, the concept was introduced in response to problems with digital records and the life cycle. This was caused by the significant change in communication that occurred in the 1980s and 1990s, a time when electronic records were created and new records and records management techniques emerged. As a result, between the middle of the 1980s and the middle of the 1990s, there were extensive discussions about how records practice and theory needed to change to support current and contemporary organisational activities that were becoming more and more digital.

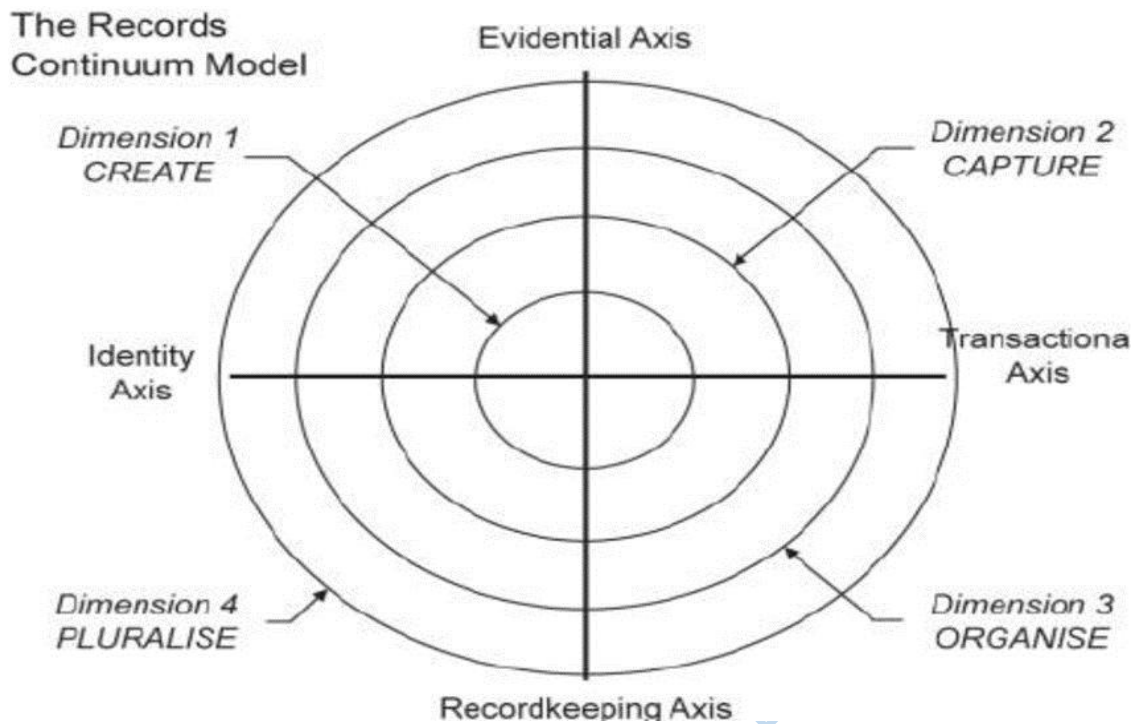


Figure 2.1 Records Continuum Model⁴⁸

The Australian-born records continuum model was first discussed in the records discourse in the 1990s. McKemmish, and Reed, point out that the origins of the continuum model, its widespread use, and the formulation and application of the records continuum model to both paper and electronic based formats can all be used to trace the evolution and development of the records continuum model⁸⁰. In the 1950s, Australian national archivist Ian Maclean developed the continuum model, which states that records and records management are two separate processes. He claimed that records managers were the real archivists and that the study of the properties of recorded information, recordkeeping systems, and categorization processes should be the main focus of records science. The second session focused on the interdependence of all stages of records such that records managers and archivists are involved in a continuum of managing recorded information. This was stressed by Canadian archivist Jay Atherton who in 2016 encouraged

the usage of the phrase continuum at the Association of Canadian Archivists' Annual Conference.

The records continuum model was developed in response to the more complicated digital growth of records and archives and was influenced by post-modern thought, according to the International Records Management Standard. Records continuum paradigm accepts the significant shift in possibilities brought about by information technology, such as the ability to exchange, disseminate, and use records for any purpose⁸⁰. Records do not always go through three discrete linear life-cycle phases, according to the records continuum model; rather, "managing records is seen as a continuous process where one element of the continuum passes seamlessly into another"¹⁰⁸.

The notion is illustrated graphically by four concentric circles that offer an integrated method to managing records as opposed to one made up of various stages⁸⁰. The eight aspects of ISO 15489, which capture this integrated approach, emphasize the critical importance of Organisation-wide practices and procedures for records management, with the specifics being determined by the space/time context in which the document is being used rather than by the document's life-cycle phase. The four tiers of the records continuum model are explained as follows¹⁰⁹.

Create Records which concerns organisational actions and reliable evidence thereof being created by capturing records of the transactions related to or supporting these actions. Capture records that is Logical groups of transactions and records series documenting processes are managed by recordkeeping systems to institute control of records by arranging and describing them systematically. Organise Records that are managed for their optimal maintenance and use, while records are described to allow their continued

control and relevance. Pluralize Records that are physically controlled by disposal to archives or by destruction, while records are managed for optimal preservation and usage, often beyond the Organisation's business purposes for which they were created and used.

The records continuum offers a means of making sense of the complexity of digital recordkeeping. An Organisation's stage of growth in terms of managing its information as proof of responsibility can be determined using the dimensions and axes⁶¹. For instance, the transactional, identification, evidentiary, and recordkeeping themes are represented by the vertical and horizontal axes respectively. As a result, records in all four dimensions are continuously and dynamically used as general records, identity documentation, activity documentation, and accounts of transactions between various stakeholders.

Figure 2's rings stand in for the continuum's dimensions (create, capture, organise, and pluralize). There are no discrete stages in a continuum, whether it be a digital or paper system. Thus, contrary to what the records lifecycle hypothesis suggests, records do not go through separate, predetermined stages. Instead of serving as rigid records administration functions, the phases serve as a point of reference in a certain context. Through the records continuum model, these phases are connected, creating a continuum in which records managers and archivists participate in the management of recorded material to varied degrees⁷².

The international community of document archives appears to have adopted the records continuum concept through the development of standards⁵. However, the creation of standards or rules does not imply that the continuum model notion has been fully integrated into recordkeeping practise. There is a lack of empirical research on the theory in practise, including the application of standards or the assessment of the theory's substantive benefits, including whether the theory has really had an impact, how it affects record

management, and the magnitude of its impact. The records continuum model, which emphasises social responsibility and accountability and places record-keeping in a crucial position with regard to maximizing Organisation's administrative return, gives clerical and records personnel an active role as managers of recordkeeping actions, coordinators, policy makers, and supervisors rather than being simply technical staff and dealing only with passive, operational responsibilities³³. This is done to maintain collective social memory as well as organisational performance and efficiency¹⁷.

The records continuum model saw record keeping as an ongoing process that progresses rather than dividing the life of the records into discrete stages that are fixed in time and space¹³. The records continuum model, proposes ideas of the record in several dimensions over time and space without obvious directions or divisions⁹. Since current records can become archives from the moment they are created, rather than waiting for final disposition to determine their fate, and since non-current records can also become active again as and when they are needed for an Organisation's purposes, there are no strict boundaries between records and records management responsibilities in the records continuum approach.

However, right from the time of record creation and before creation, in the design of recordkeeping systems, through to the preservation and use of records as archives, the records continuum is a consistent and cohesive regime of management procedures²⁹. Thus, the continuum approach means the end of the conventional line of demarcation between the roles of the records manager and the archivist, which is perceived by some as artificial and constricting. The creation, systematic management, and preservation of records are not separate and linear phases. This indicates that the records continuum model is important since it expands on the life-cycle theory's interpretation of records and

recordkeeping systems. Due to the wide range of environments in which archivists and records managers work and the varied time/space settings in which archives and records are used, such widening is essential.

A notion of records that emphasises their usage for transactional, evidential, and memory functions as well as unified record and recordkeeping systems. Records of short term and continuing significance are also included in this idea: A comprehension that both paper and digital records are logical, as opposed to physical, things; The profession of recordkeeping is institutionalized being essential to organisational and societal processes and goals, both implicitly and explicitly; The understanding that records science serves as the cornerstone for compiling knowledge that may be revised in response to how organisations and society have operated throughout history, at the present time, and in the future.

The continuum model, according to is a proactive, systems-based approach to records management that fundamentally alters the function of recordkeeping⁷⁷. The IRMT discovered that the continuum concept, as opposed to the lifespan theory, is the optimum method for maintaining both electronic and paper records since the former fosters greater responsiveness, boosts productivity, and meets user needs. The records continuum is regarded as "the world's most inclusive model for archives", Records continuum model has been applied to comprehend recordkeeping in organisations and society at large as well as to raise awareness of the fact that numerous stakeholders are involved in the information that is maintained in records and collections⁸⁰.

The records continuum model has been viewed in a variety of ways, including as a tool, a device, a paradigm, a metaphor, a logical model, a space/time construct, and a style of thinking¹¹⁰. The records continuum model is widely used as a teaching tool, a conceptual

framework or research instrument, a metaphor, and an implementation model⁴⁴. This is demonstrated by the fact that it has been used to create standards and relationship models between entities and metadata as well as to create systems and programmes for recordkeeping and appraisal of relevant information⁴⁴.

In the context of records management practices, the Record Continuum Model has several key implications: Proactive and holistic approach, the model emphasizes the need for Organisations to adopt a proactive and holistic approach to records management. It encourages Organisations to consider the entire lifecycle of records from their creation to preservation or disposal. This means that records management practices should be integrated into business processes and decision-making from the outset. Contextual and relational understanding approach, the model highlights the importance of understanding the context and relationships surrounding records. Records are seen as products of specific activities, transactions, and interactions within an Organisation. Therefore, effective records management requires an understanding of the business processes, systems, and people that generate and use records. Continuity and accountability approach, the Record Continuum Model emphasises the need for maintaining continuity and accountability throughout the lifecycle of records. It recognizes that records are created, used, and managed by multiple stakeholders over time. Thus, records management practices should ensure the reliable and authentic capture, storage, and retrieval of records to support Organisational functions, compliance requirements, and accountability.

Integration of technology approach, the model acknowledges the role of technology in managing records. It highlights the need for Organisations to adopt appropriate technological solutions that support the creation, capture, storage, retrieval, and preservation of records. This includes electronic document and records management systems (EDRMS), digital preservation

tools, and other technologies that enable effective records management. Social and cultural approach, the Record Continuum Model recognizes that records are influenced by social and cultural factors. It emphasises the importance of considering the social, cultural, and ethical implications of records management practices. This includes addressing issues such as privacy, access, and the diverse needs of stakeholders in managing records.

The Record Continuum Model provides a comprehensive framework for understanding and managing records throughout their lifecycle. Its relevance to records management practices lies in its holistic, proactive, and contextual approach, which promotes effective and accountable records management within Organisations.

2.2.2 Situation Awareness Theory

Situation Awareness Theory is relevant to emerging technologies awareness as well. The emerging technologies are concerned with the current era of technological advancements that includes innovations such as artificial intelligence, robotics, internet of things (IoT), big data, and automation. These technologies are transforming various industries and societies, bringing new opportunities and challenges

Perception which is the first submetric states that there are ways of perceiving different situations per time, the perception or awareness of a particular situation may not necessarily influence use and the features and benefits may not be understood according to literatures. Comprehension on the other hand, is the second stage of situation awareness theory, it is concerned with understanding the features, use and benefits the emerging technologies, this stage of awareness is about knowing the existence and availability of the technologies. Projection, the third stage of awareness according to the situation awareness theory, it is the ability to understand the pros and con of a particular

situation which influences the decision-making process of individuals including the librarians. Projection is concerned with expectations of individuals concerning what they are being aware of¹¹⁰.

Situation Awareness (SA) theory is a cognitive concept that focuses on a person's perception and understanding of their environment, particularly in dynamic and complex situations. It involves being aware of relevant information, comprehending its meaning, and projecting future states based on the current situation. This theory is highly relevant in the context of the emerging technology awareness, which is characterized by the integration of digital technologies, artificial intelligence, automation, and data-driven decision-making across various industries.

Mica Endsley, an American cognitive psychologist with expertise in human factors and human-computer interaction, proposed the situation awareness theory at the beginning. She developed this idea in the 1990s, and the field of aviation and other high-risk industries where maintaining situational awareness is essential for safety and performance have benefited from her work. Understanding how people see, understand, and project the present and future states of their surroundings has greatly benefited from Endsley's studies on situation awareness. Situation Awareness Theory is a conceptual framework that explains how people perceive and comprehend their surroundings, particularly in dynamic and complicated settings. It focuses on how individuals receive, process, and apply information to create a thorough picture of the present circumstance and predict next occurrences or changes.

Situating the Situation Awareness theory to the study of librarians and their role in the emerging technologies, several key aspects come into play among which are: Technology Awareness,

librarians need to be aware of the technological advancements associated with the emerging technologies, such as AI, machine learning, and data analytics. They should understand how these technologies impact their work, services, and the information landscape in general. This involves not only recognizing the technologies but also understanding their capabilities and limitations. Another aspect is data literacy. Data literacy is crucial for librarians to effectively navigate the data-driven environment of the emerging technologies. Librarians need to be skilled in interpreting and analyzing data, as well as in helping patrons to understand and use data effectively. Having a high level of data literacy enhances librarians' ability to provide relevant and valuable information services. In the aspect of institutional support, librarians require institutional support to adapt to the changes brought about by the emerging technologies. This support can come in the form of training, resources, and a conducive environment for learning and innovation. Institutions should recognize the evolving role of librarians and provide them with the necessary tools to thrive in the emerging technologies context.

Digital Records Management Practices are also important based on the fact that there are increasing digitization of information, librarians play a vital role in managing digital records. They need to be aware of best practices in digital preservation, metadata management, and data security to ensure the long-term accessibility and usability of digital resources. Applying Situation Awareness theory to these aspects involves librarians continuously monitoring and understanding their environment, which includes technological trends, information needs of users, institutional policies, and the evolving landscape of digital information. They must then process this information, comprehend its implications, and make informed decisions to provide effective services in the 4th industrial revolution era.

The researches in this area could involve studying how well librarians are adopting to the technological shifts of the emerging technologies, assessing their level of technology awareness and data literacy, exploring the support they receive from their institutions, and evaluating the

effectiveness of their digital records management practices. Such studies can contribute to the development of strategies to enhance librarians' role in the 21st century and ensure they remain valuable assets in a rapidly changing information landscape.

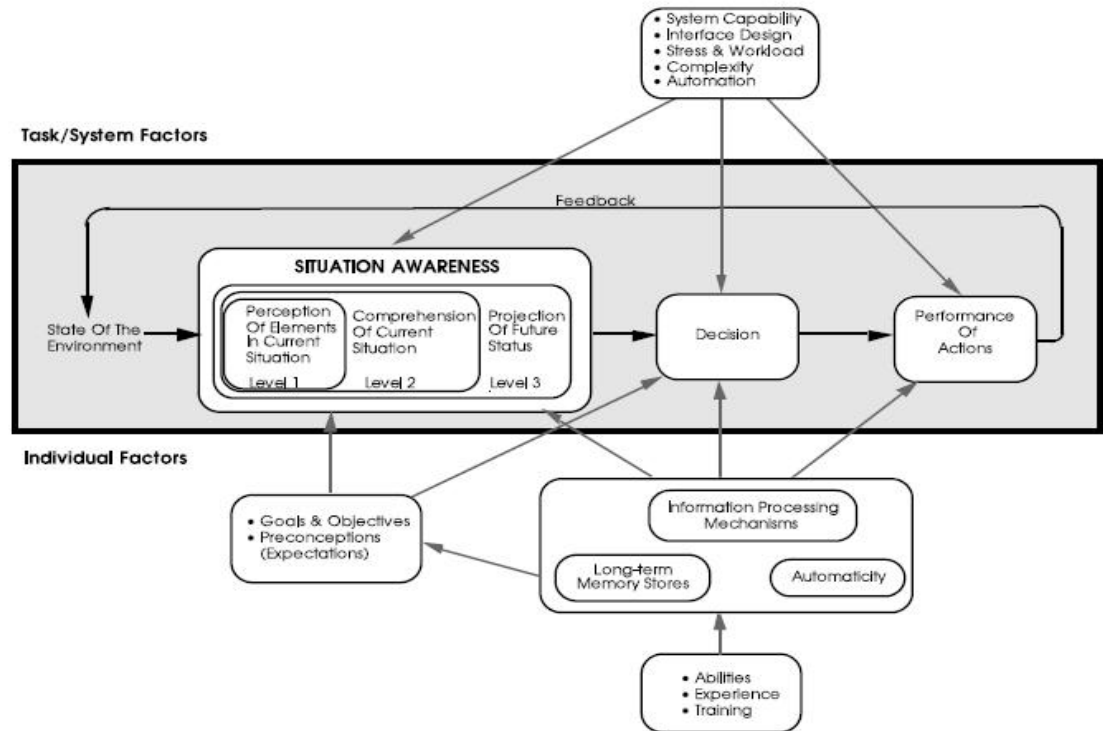


Figure 2.2 Model of SA in Dynamic Decision¹⁴⁶.

First and foremost, perception in Situation Awareness is crucial and it is the act of being aware of the existence of a particular thing. The likelihood of developing an inaccurate impression of the situation drastically increases in the absence of fundamental perception of crucial facts. It was discovered that 76% of SA errors in pilots may be attributed to issues with the perception of necessary information (caused by either systemic flaws or cognitive processing issues)⁵⁵. However, the concept of situation awareness extends beyond simple perception. It also includes the way in which individuals mix, decipher, organise, and retain knowledge which is comprehension. As a result, it goes beyond

merely receiving or paying attention to information; it also involves the integration of many pieces of information and an assessment of their applicability to the individual's goals. This is comparable to reading with a high level of comprehension as opposed to simply reading words. Based on research issues with comprehension accounted for 20% of Situation Awareness errors⁵⁵. The last component of situation awareness is projection. The ability to predict upcoming situation events and dynamics identifies operators with the highest level of situational awareness. Making decisions quickly is made possible by the capacity to extrapolate from present dynamics and occurrences to foresee future events (and their ramifications).

Fighter pilots' attention to targets on a tactical situation display was found to be directly correlated with the significance of such targets in their tactical tasks¹⁶. Air traffic controllers have been shown to lose interest in less crucial information as task load (number of planes) grows⁵⁵. Drivers paid greater attention to the automobiles that were in front of them and close by than to those that were behind them or farther away, which also reflected a distribution of attention based on the relevance of the vehicles' functions¹². In all three jobs, it is obvious that the skilled operators focused their attention in ways that were consistent with operational objectives. Depending on how important a piece of information is deemed to be, attention is prioritized accordingly. It should be noted, however, that even skilled operators might make mistakes in this process by failing to prioritize some inputs over others.

The theorist discussed the difficulties aircrews encounter when dynamically juggling a variety of activities and pieces of information, as well as the role that attention plays in overcoming these difficulties. Situations in which the operator had access to all the

necessary information but neglected to act on it accounted for 35% of all SA errors. The most frequent association with this was distraction brought on by other chores⁵⁵.

Situation awareness still faces difficulties in accurately prioritising information in a changing environment. In order to decide where to best focus one's attention for more in-depth information (local Situation Awareness), good Situation Awareness requires sufficient awareness of what is happening across a wide variety of Situation Awareness requirements (global SA). Situation Awareness is further hampered by the limitations of working memory. In order to aggregate, analyse, and attempt to make projections with the limited working memory available to them, novice decision makers and those in fresh situations must do so. (This model, however, demonstrates that in practise, skilled decision makers have a variety of techniques for getting over this bottleneck, which are explained below). Also, working memory deficits, which occur when information is first perceived and then forgotten, account for 8.4% of SA errors, which are frequently brought on by interruptions and distractions from the job at hand⁵⁵. A working memory restriction may also be at play in numerous other failures to build comprehension and projection.

Here's how situation awareness theory can be applied to emerging technologies, Perception of emerging technology, Individuals need to be aware of the various emerging technologies available, their capabilities, and how they are being deployed in different domains. This includes understanding the basics of AI, robotics, IoT, and other relevant technologies. Comprehension of the Current Technological Situation, People must develop a deep understanding of the implications, benefits, and risks associated with emerging technologies. This involves grasping how these technologies are shaping industries, the potential impact on the workforce, ethical considerations, and privacy

concerns. Projection of Future Technological States: Anticipating the future developments and trends in emerging technologies is essential for making informed decisions and strategies. This includes being aware of emerging technologies, potential disruptive innovations, and the implications they may have on businesses, societies, and individuals.

By applying situation awareness theory to emerging technologies, individuals can stay informed, adapt to technological changes, and make proactive decisions. It helps in harnessing the opportunities provided by these technologies while also addressing the challenges and mitigating potential risks associated with their adoption. The concept of situation awareness theory remains relevant in the context of the emerging technologies. Situation awareness theory can also be applied to understand and address the challenges and opportunities presented by emerging technologies. Here are a few key aspects:

Complexity and Dynamics, emerging technologies introduce complex and rapidly changing environments. Situation awareness theory helps individuals and Organisations comprehend and adapt to these complexities by providing a framework to monitor, understand, and predict the impact of emerging technologies.

Decision Making, that is Effective decision making in emerging technology contexts requires a high level of situation awareness. Understanding the capabilities and limitations of different technologies, as well as their potential risks and benefits, is essential for making informed decisions and developing appropriate strategies. **Human-Machine Interaction** is with the rise of automation and artificial intelligence, humans interact more closely with machines and intelligent systems. Situation awareness theory helps in designing human-machine interfaces that enhance situational awareness and

support collaboration between humans and intelligent technologies. Training and Workforce Development, as emerging technologies continue to reshape industries, there is a growing need for training and developing a workforce equipped with the skills to understand and operate in technologically advanced environments. Situation awareness theory can inform the design of training practices that focus on enhancing individuals' situational awareness in the context of emerging technologies.

Overall, situation awareness theory remains applicable in the context of emerging technologies, helping individuals and Organisations navigate the complexities, make informed decisions, and adapt to the changing technological landscape.

2.2.3 Skill Acquisition Theory

The Skill Acquisition Theory, developed by Hubert Dreyfus and Stuart Dreyfus, is a model that explains how individuals progress through various stages of skill development. This theory is particularly influential in the field of education, human-computer interaction, and artificial intelligence. Hubert Dreyfus, a philosopher, and Stuart Dreyfus, a researcher in artificial intelligence, collaborated to propose a framework that describes five stages of skill acquisition which are: Novice, Advanced Beginner, Competent, Proficient, and Expert.

Novices have little to no experience in the area digital record management practices in university libraries, they follow rules or guidelines mechanically. They lack a deep understanding of the context and often struggle when facing unexpected situations. Novices need explicit instructions and guidance. At the advance beginner stage, individuals start to recognize some patterns and make connections between different situations. They can apply their limited knowledge and experience to make basic

decisions. However, their understanding is still fragmented and lacks nuance. The third stage is the competent stage. Competent practitioners have gained enough experience to handle a wide range of situations with a more holistic understanding. They can prioritize tasks and adapt their approach based on the context. They also begin to perceive patterns that novices may not notice. At the proficient stage, proficient individuals demonstrate a deeper understanding of the skill domain. They can make more intuitive judgments and decisions based on their vast experience in librarianship. They have a sense of "feel" for the domain and can adapt flexibly to various situations. The last of the all stages is expert stage. Experts have achieved the highest level of skill acquisition. They possess an intuitive grasp of the skill and can make complex decisions quickly. Their expertise allows them to improvise creatively and break from traditional guidelines when necessary. Experts often have difficulty explaining their decisions to novices, as their actions are guided by a deep internalized understanding.

Dreyfus' model emphasizes the importance of experiential learning and practical application in skill development. The theory has been applied to various fields to understand how individuals learn and progress in areas like sports, music, medicine, and even in the design of user interfaces for software applications. It's worth noting that while the Dreyfus model provides a valuable framework for understanding skill acquisition, some critiques have arisen over the years. Some argue that the transition between stages might not be as linear or discrete as the model suggests, and that expertise is not solely based on experience but can also involve deliberate practice and focused training¹⁴³. Nonetheless, the Dreyfus model remains a foundational concept in discussions surrounding skill development and expertise.

Situating the theory within the context of this study, the Dreyfus Skill Acquisition Theory can be used as a framework to understand how librarians progress in their adoption and mastery of technology-related skills in the context of the 4th Industrial Revolution. The theory's five stages of skill acquisition can provide insights into how librarians transition from novices to experts as they navigate the challenges and opportunities presented by technological advancements in their field.



Fig 2. 3 Dreyfus Theory of Skill Acquisition¹⁴³

Novice librarians may have limited exposure to the technologies associated with the emerging technologies, such as artificial intelligence, big data analytics, and automation. They might require explicit training and guidance to understand the potential applications and implications of these technologies in a library setting. Data literacy skills might be basic, and they might rely heavily on institutional support to implement digital records management practices¹⁴³.

Advanced Beginner Librarians at this stage start recognizing patterns in technology adoption and might have some exposure to data literacy concepts. They can begin to experiment with new tools and technologies, but their understanding is still limited. Institutional support plays a crucial role in helping them bridge the gap between theory and practice. Competent librarians have gained practical experience with various technologies. They possess a better understanding of data literacy and can make informed decisions about adopting specific tools or strategies. They can manage digital records more effectively and efficiently. Their level of institutional support might influence their ability to implement innovative practices. Proficient librarians have a deep understanding of the implications of emerging technologies for their field. They can creatively adapt and integrate these technologies to enhance library services and operations¹⁴³.

They possess advanced data literacy skills, allowing them to analyze and interpret complex data sets. Their digital records management practices are streamlined and efficient, contributing to enhanced information retrieval and preservation. Expert librarians have mastered the integration of emerging technologies into library functions. They possess an intuitive grasp of how these technologies can transform the user experience and information management. Their data literacy skills are sophisticated,

enabling them to contribute to data-driven decision-making. They might also be influential in shaping institutional policies and practices related to technology and records management.

Throughout this study it's assumed that Dreyfus skill acquisition theory can help the researcher understand the progression of librarians' skills and competencies in the context of emerging technologies, and data literacy. It can also shed light on the role of institutional support in facilitating this progression and inform recommendations for training programs, policy changes, and support mechanisms that can aid librarians at different stages of skill development.

2.2.4. Ververde and Rodrigue Model of Institutional Support.

Institutional support refers to the resources, assistance, and guidance provided by an organization to individuals or groups to help them achieve their goals, fulfill their responsibilities, and enhance their performance within the organizational context. This support can manifest in various forms, including financial, technical, educational, and moral support. Each form of support plays a crucial role in empowering individuals to excel in their roles and contribute effectively to the organization's mission¹¹¹.

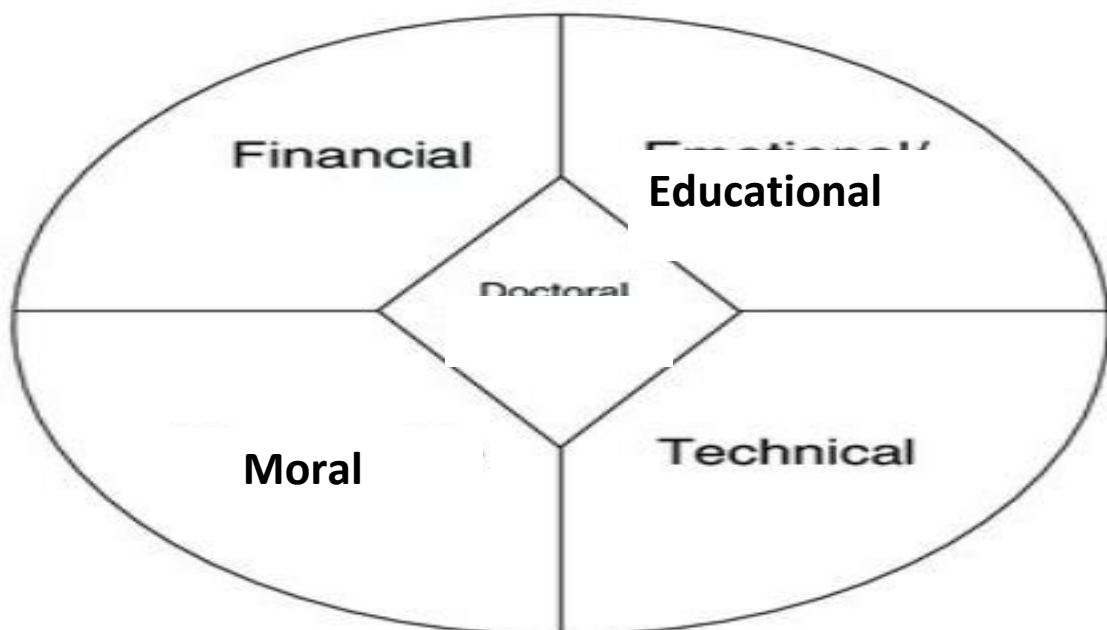


Fig. 2.4 Ververde and Rodriguez Model of Institutional Support¹¹¹.

Financial Support, which involves providing monetary resources to individuals or teams to facilitate their work or projects. This could include funding for research initiatives, purchasing necessary equipment or tools, attending conferences, training workshops, or covering expenses related to professional development. Financial support helps remove financial barriers and allows individuals to focus on their tasks without being hindered by budgetary constraints¹²¹.

Technical Support also involves providing assistance with technical challenges and ensuring access to necessary technologies. This could include IT support for resolving technical issues, providing access to software or hardware, and ensuring that individuals have the tools they need to perform their tasks efficiently. Technical support is especially important in fields where specialized skills and technologies are required, such as in the implementation of advanced digital systems or data analysis tools.

Educational Support which refers to providing opportunities for learning and skill development. This could include offering training programs, workshops, courses, or access to educational resources. By investing in educational support, organizations enable individuals to acquire new knowledge, improve their existing skills, and stay updated with the latest developments in their field. This can lead to improved job performance, innovation, and adaptability¹¹².

Moral Support as well involves providing encouragement, recognition, and emotional assistance. This can have a significant impact on individuals' motivation, confidence, and

overall well-being. Positive feedback, acknowledgment of accomplishments, and a supportive work environment contribute to a sense of belonging and commitment. Moral support is especially important during challenging times, as it helps individuals overcome obstacles and maintain their enthusiasm for their work. Institutional support is integral to fostering a conducive and productive environment within an organization. When individuals feel that their organization is invested in their success, they are more likely to be engaged, motivated, and committed. Effective institutional support can result in improved job satisfaction, increased productivity, and a higher level of innovation. However, it is important to note that the effectiveness of institutional support relies on its consistency, transparency, and alignment with the organization's goals.

In this study, institutional support plays a critical role in influencing how librarians navigate the challenges and opportunities presented by the 4th Industrial Revolution technologies, develop data literacy skills, and effectively manage digital records. Institutional financial support is essential for librarians to acquire the necessary resources for adapting to new technologies and enhancing their data literacy skills. Libraries need to allocate funds for purchasing advanced software, tools, and hardware required for data analysis and digital records management. Financial support also facilitates attendance at relevant conferences and training programs that can keep librarians updated on the latest technological advancements. Moreover, Librarians require robust technical support to effectively implement and utilize 4th Industrial Revolution technologies. Institutions should provide IT support to troubleshoot technical issues, maintain the functionality of software and hardware, and ensure seamless integration of technologies¹²².

This support ensures that librarians can focus on utilizing these technologies without being hindered by technical challenges. Furthermore, Institutional support in the form of educational opportunities is crucial for librarians to develop data literacy skills and stay informed about emerging technologies. Libraries should offer training programs, workshops, and access to educational resources that help librarians understand the intricacies of data analysis, artificial intelligence, and automation. This empowers librarians to leverage these technologies effectively and make informed decisions. Much more important is A supportive work environment that recognizes the efforts of librarians in adapting to new technologies and improving their data literacy skills is essential. Institutional recognition and encouragement contribute to librarians' motivation and job satisfaction. Acknowledging their achievements in implementing innovative practices and managing digital records fosters a sense of accomplishment and belonging.

By understanding the role of institutional support in the context of the study, researchers can offer insights and recommendations for libraries and institutions to better facilitate the integration of new technologies, improve data literacy skills, and enhance digital records management practices among librarians.

2.3 Review of Empirical Studies

There are a lot of paper-based records kept by governments, institutions, and organisations around the world, but there aren't many practices in place to deal with this issue. Managing the massive amounts of organisational records being created required a proper and effective management practices²⁹. This study is based on a qualitative research methodology that uses a review of the literature to assess records management practices. The narrative method will lean more towards an interpretivist perspective than a positivist

one. Because a researcher is always involved in the events being investigated, this interpretivist approach assumes that a researcher cannot adopt a value-neutral posture or maintain objectivity. Instead of evaluating phenomena using scientific criteria of proof, interpretivist attempt to understand phenomena as described by research study participants¹¹⁹. As a result, the analysis that results from an interpretivist viewpoint can only be justified and evaluated based on the strength of each case and the evidence that supports it. The interpretivist method was deemed to be the most appropriate because the goal of this study is to comprehend the phenomena of records management practises in relation to ways used by librarians.

Due to the descriptive and historical nature of this study, it mostly depended on secondary data sources that the researchers collected from theses, books, and journal articles. Since secondary data is historical in nature and is made up of information that has already been gathered by earlier researchers on the topic¹¹⁸. It is preferred as a source of data collection because it is less expensive than primary source data collection. Secondary sources aid in the explanation, description, and validation of findings as well as the drawing of specific conclusions from all findings. The records management practices literature review that was conducted dealt with works, such as those by authors that primarily concentrated on establishing a theoretical framework analysis and a literature review of graduate-level records management research utilising content analysis⁷². There are many methods for analysing qualitative data, and content analysis is one of them. Content analysis is a technique for examining written, vocal, or visual communication signals⁴⁵. The current study's content analysis used sources from a variety of theses, books, and articles.

Conventional content analysis is typically utilised with collected data in a study design with the intention of describing a phenomenon as well as when the body of knowledge regarding the phenomenon is fragmented or constrained⁴⁶. In the context of the current study, this phenomenon refers to the use of the records continuum model and life-cycle theory to manage organisational records, particularly in the public sector. When a study's goal is to extend an existing theory or previous research, deductive content analysis is used⁴⁶. The qualitative deductive method involves extending or validating a theory, model, or study findings. Deductive content analysis is therefore used in the current study to further the theory, model, and findings that were investigated during the literature review.

2.3.1 Emerging Technologies and Record Management Practices

Researchers have observed that technology has become essential tools in meeting the information needs of library patrons. This has created interest in various issues relating to technological application in the library such as requirements for fully functional, IT-compliant libraries, funding models, maintenance culture, technical expertise, and space availability. Researchers have also examined the difficulties encountered, such as insufficient funding for libraries, a lack of appropriate training for users, and inadequate resources. However, researchers have also focused on the role of awareness of emerging technologies on various library functions such as digital records management.

A study conducted in Imo State, Nigeria investigated awareness and use of cloud computing and how it affected library activities such as digital records management in Imo State, Nigeria. The results show that the libraries under study have a considerable degree of knowledge about cloud computing concepts and technology. The usage of cloud computing technology by libraries in the institutions under investigation was also

found, and some of the main advantages of librarians adopting cloud computing technologies include file sharing and resource cost effectiveness. However, when using cloud computing to carry out their duties in the library, librarians also noted security, privacy, and numerous taxation as significant drawbacks. On the basis of these conclusions, suggestions were made¹¹³.

Furthermore, researchers reported that the awareness and use of cloud computing contributed to data security in university libraries. The study's conclusions showed that university libraries in Africa are not adopting cloud computing at a rapid pace. It was also established that the absence of institutional policy guidelines and cloud service providers' authentication procedures constituted significant obstacles to university libraries' adoption of cloud computing. The study's recommendations included the full use of cloud computing services by university libraries to store research data in order to improve visibility and accessibility. Academic library management should establish rules and regulations that will direct the choice of cloud service provider for storing research data.

Another emerging technology is the open source software which can be used for various activities in the library including digital records management. The introduction of OSS has changed how libraries operate on a regular basis and brought several new concepts for managing the library. Due to two primary factors—the system's functionality and cost—more libraries are switching from proprietary to open source software each year. Open source software has grown in popularity in libraries. It is imperative that organisations exercise caution while selecting and customising an appropriate supply chain management system (OSS) as it may meet particular business requirements related to the performance of the organisation. Researchers examined the role of OSS awareness

of organisational effectiveness of libraries in Nigeria. It was found that OSS is capable to extend organizational performances as it is an opportunity for the organization to adopt with current change and to emerge IR 4.0 significantly. Every organization such library must aware the dynamic of technology such as OSS across their organization. However, it is important for organization to be carefully during selection and customization an appropriate OSS as it might address specific business requirement in relation to the organizational performance. In this paper, the proposed framework will associate organization competitive edge throughout their ability to improve their performance¹¹⁴.

The emerging technology, which is characterised by the integration of technologies, civilizations have seen a dramatic shift in technical advancements on a global scale¹¹⁵. Authors refer to this revolution, as the 4th industrial revolution technologies or emerging technologies, as the new era that expands and builds on the effects of digitalization in novel and anticipated ways. Artificial intelligence (AI), blockchain, the internet of things (IoT), robotics, cloud computing, biotechnology, and other technologies are used and applied as emerging technology. Organisations have adopted these technologies, according to a new World Economic Forum research, to boost workplace efficiency and service delivery. More than 50 billion devices are connected to the internet as of 2019, according to the World Economic Forum in 2018. A researcher predicts that emerging technologies will lead the volume of data produced to grow tremendously¹¹⁶.

Despite the aforementioned improvements, many academicians agree that Africa is lagging behind other continents like Europe in adopting emerging technology². African nations lack well defined policies that give organisations the knowledge they need to make use of emerging technologies⁷⁶. In contrast, it was argued that some of the factors

preventing countries in the South African Development Committee (SADC) from utilising emerging technologies are the absence of fundamental legislation and policies on information and communication technology (ICT), cybersecurity, and data protection¹²⁶.

Organisations in the African setting, however, cannot afford to lose out on opportunities brought about by emerging technologies given the expanding range of economic activities and corporate operations. This has caused African nations to buy into the myth of embracing emerging technologies. For instance, the Bonassama section of the national hospital in Cameroon employed Sophia's artificial intelligence to provide medical care. Businesses have started using blockchain to deliver goods in Uganda. However, as organisations switch from analogue to digital practices, the records management landscape is continually changing due to the spread of emerging technologies outside of Africa and worldwide. Records managers must now be continually aware of the dangers associated with maintaining digital information as a result of these changes¹³². This is due to the threat posed by technologies like the internet and social media to issues with information security¹²⁶. Theft, unauthorised access, and the use of sensitive and personal information without authorization are a few of these dangers. The adoption of emerging technologies in records management has been spotty, particularly for businesses that have trouble managing electronic data. The topic of data protection has gained attention as a result¹²⁵.

One of the emerging technologies being employed in records management is block chain. Block chain is a safe and decentralised method of storing and distributing data without the need for outside applications. The existence of block chain records is acknowledged by some scholars⁸⁸. To maintain electronic documents, for instance, sophisticated nations like the United Kingdom (UK) use Block chain technology. There are no published examples

of the usage of block chain technology in Africa. Due to a lack of information and comprehension of the technology as well as infrastructure challenges, African governments are currently trailing in their use of Blockchains technology in record management⁸⁸. For instance, some researchers agree that organisations in Botswana and Zimbabwe are not familiar with blockchains. The Provincial Archives of Saskatchewan define cloud computing as the use of internet servers for record administration, processing, and archiving⁸⁸. The Provincial Archives of Saskatchewan goes on to say that record managers can access data in the cloud via web browsers or any other common cloud computing software thanks to cloud computing. Using security measures like password encryption, the majority of clouds can protect data¹¹⁷. Email, SharePoint, and Google apps are three cloud computing services that are currently used in Africa.

Despite this, researchers assert that Africa is only now beginning to utilise cloud computing services⁸⁸. As evidence, scholars emphasized that because public records managing organisations are unaware of disruptive technologies, they are still lagging behind in adopting technology. Due to the lack of a framework for maintaining digital records in the cloud, the government of South Africa, for instance, continues to have difficulties with manual paper records⁹⁷. Even if this is true, various variances in the literature point to usage of cloud computing in Africa. For instance, the Zimbabwe Open University utilises cloud services including online backup, creation, and storage options to carry out records management procedures in Zimbabwe¹³⁸. It was said by a scholar that large number of Kenyan public organisations are using cloud computing services to maintain electronic data⁶².

The internet of things (IoT), is one of the emerging technology that is most frequently used in records management. IoT is the terms used to describe commonplace devices that connect to a network⁸⁰. These include desktop and mobile computers, as well as other comparable technology. Through the internet, these items can transmit and receive data, information managers have embraced this technology, since it offers high levels of protection for documents and the capability to designate information as sensitive and restrict unauthorised access⁷⁹. Several studies document the use of IoT technology in African record-keeping. Nigeria have embraced technology like Electronic Document Management Systems (EDMS) and Electronic Document Records Management Systems (EDRMS) for better records management, as noted by Balogun¹⁴. To enhance service delivery, Botswana's Ministry of Investment, Trade, and Industry (MITI) installed the Document Workflow Management System (DWMS)⁸⁸. To maintain electronic records, South African municipalities continue to use Free and Open-Source Software (FOSS)⁸⁵.

Looking at the world now, we can see that we already live in a civilization where artificial intelligence is used to fuel predictive applications. Authors define AI as the use of digital technology to build systems capable of carrying out activities that call for intelligence²⁸. The records already contain a range of AI techniques, as described in Record Point. Automated rules, black boxes, natural language processing, machine learning, and automated classification. The incorporation of these practises into records administration has not been as simple as hoped due to the intricacy of the technology. However, it was found that Africa is still in the early stages of investigating and incorporating AI into records administration⁴⁴. This explains why there isn't much literature on AI use in records management in peripheral Africa. Additionally, records

managers have struggled to create strategies and practises to open the door for the use of AI in records management in Africa, according to Duranti³². The second goal aimed to determine the potential advantages of utilising emerging technology when it came to data protection and records management. The results of the literature analysis show that 4IR technologies help to protect data in record management. Benefits including improved record security, data protection, and risk reduction have been mentioned by several authors ¹³². In-depth discussion is given regarding the advantages of emerging technologies for data protection.

Security problems are always present for data records that are created, managed, and stored using emerging technologies. Positively, businesses that adopt emerging technologies will undoubtedly reap rewards. These advantages include enhancing data record security, which eliminates the possibility of their destruction or damage ¹³². In a similar vein, a group of researchers assert that businesses that deploy emerging technology benefit from 4IR security features' ability to protect data¹⁷. Another researcher argument regarding cloud computing, data saved there is secure since cloud computers are undamaged and immune to natural calamities or physical mishaps⁸⁹. Incorporating emerging technologies into records management can improve data protection, according to the literature ⁸⁹. As an example, IoT technologies like Document Management Systems (DMS) can enhance document management procedures by making it easier to locate documents and making sure that security guidelines are followed. This makes it possible to track and document every change to the data for system evaluation. Additionally, by enabling businesses to keep their digital data on their own private block chain and manage who has access to it, data safety might be improved.

The information would therefore be decentralised and under their control. Blockchain would improve data protection since it would give users secure access to their data. When it comes to AI, data records can be divided into sensitive and confidential records and given high security levels, protecting data from unauthorised users. The emerging technologies aid in reducing privacy concerns and mitigating data privacy breaches. Electronic document management systems (EDMS), one of many IoT technologies, can secure data with passwords. This therefore lessens the effects of any prospective data destruction or authorised access. In support of this assertion, it was argued that using IoT technology to retain records ensures that there has been no violation of privacy, which lowers worries about legal actions brought about by such violations or by the alteration and exposure of personal information⁸⁶. The adoption of emerging technologies also prevents the loss of private information, which is essential for accountability inside the organisation. In addition, because they have records as evidence, businesses who use emerging technology are probably to spend less money on legal proceedings.

Despite the advantages of emerging technologies for records management in terms of data protection, these technologies have also created difficulties for managing organisations in terms of data protection. Records security is a problem for records managers in Africa, according to research findings¹¹⁸. Data tampering is more likely to occur when emerging technologies, like IoT, have the ability to capture and distribute data and records in digital form⁸⁴. It is also emphasized that IoT devices can be targeted, which is why records management continues to worry about data security. For instance, a hacker may use the weakness to alter all the data and make it useless. Records security is a challenge, according to a research done at Moi University on managing e-records security

in Kenya. It was also reported that hackers have developed new methods to access cutting-edge emerging technologies in order to steal and alter electronic documents⁶². In addition to IoT technology, cloud-stored data records are subject to unauthorised access⁶². These are typical in businesses where data records are kept in public clouds as opposed to private ones. Data records stored in the public cloud will continue to be susceptible to malicious tampering⁶².

emerging technologies like cloud computing and the Internet of Things, which enable massive amounts of data to be stored remotely, might have an impact on information privacy since sensitive and classified information may be made available to authorised users. Data is vulnerable to external risks such as virus and hacking assaults when it is in an automated environment¹⁸. Due to the sensitive and classified data records' unauthorised handling, processing, and use, privacy issues are raised by their exposure. According to a researcher, privacy violations can result in litigation, expense, and loss of confidence, which all have an impact on record management¹⁸. In support, a group of authors state that the government in South Africa has to deal with unwarranted financial losses caused by legal actions brought about by breaches of privacy⁹³. Additionally, the fundamental principles of accountability and good governance, which are crucial in democratic states, are impacted by the disclosure of private information.

The confidentiality and privacy of records can be protected by the implementation of pertinent laws and regulatory frameworks in the administration of records⁷⁸. The lack of sufficient data protection legislation, however, is a problem in Africa, according to literature studies¹⁴⁴. This problem exists in nations without data protection legislation, such as Lesotho, Eswatini, and Tanzania, where data is not protected. Organisations have the opportunity to improve data protection thanks to existing data protection rules, especially

in the emerging technology context. Records-managing organisations continue to confront difficulties in nations with data protection legislation, such as South Africa, Nigeria, Botswana, and Ethiopia, because most of it is not adequately incorporated into records management.

The majority of data protection laws ignore the integration of emerging technologies, including how to safeguard data in cloud, blockchain, or IoT systems. South Africa's Protection of Personal Information Act does not address legal issues related to the storing of personal information on numerous clouds⁸⁵. Records management systems can be attacked by viruses that destroy electronic documents and result in the total loss of data. Other channels by Hussain for information exposure involves the injection of false data, wherein a legitimate attacker can seize control of the system, alter it, and inject false data into it, hence jeopardizing the system's security⁵¹. A data breach is another technique, when authorised users get access to the system and change data. The authors go on to say that there are issues with the POPI because it is unclear about how information is protected when emerging technologies are present.

The Botswana Data Protection Act of 2018 appears to have been drafted without taking into account the unique challenges associated with records created in cloud environments, such as social media. In spite of system tampering and failure, offsite backup can guarantee that data records are secure⁹⁰. Data on document management systems (DMS) may be more difficult to interpret as a result of hardware and software failure in IoT technologies. As a result, all data records are completely lost. To add to this assertions it was contended that although blockchains can safeguard data via encryption with a key, the data is highly susceptible to loss in the event that the key is lost⁵¹.

In the current digital era, organisations such as university libraries produce enormous volumes of data and documents that must be effectively managed. Manual efforts are typically used in traditional record-keeping procedures, which can be time-consuming, error-prone, and inefficient. However, libraries can increase productivity, improve data accuracy, and streamline procedures by integrating AI technologies into record management systems like D-Space software. In a line with this a study examines how artificial intelligence (AI) may transform record management on D-Space software, resulting in increased efficacy and efficiency for university libraries. Libraries offer access to a wide range of books and information resources, which have long been considered the cornerstone of knowledge. It was found that application of emerging technologies for managing libraries has been a game-changer, revolutionising how libraries operate and enhancing patron experience in general¹⁴⁹.

Another study conducted in South Africa examine the methods used for digital preservation in South African university libraries. approach: The data was gathered using the survey research approach. A survey was conducted among twenty-seven academic institutions in South Africa. The Statistical Package for the Social Sciences was used to analyse the data. The results showed that the lack of established standards, policies, and processes, insufficient resources, as well as a lack of expertise and training, made it difficult for university libraries to maintain and manage their digital resources. Along with the prospect of technological obsolescence due to rapidly evolving software and hardware, inadequate technology infrastructure, and legal concerns, they also struggled with limited money and teamwork. prompted the need for best practices and solutions to help university libraries preserve digital resources over the long term. The findings constituted the foundation for recommendations¹¹⁹.

Researchers also examined the records management procedures used by federal university administration staff in Northwestern Nigerian libraries. The purpose of the study was to ascertain what kinds of records are created and kept up to date, what storage facilities are available, and

how administrative documents are handled. The use of narrative-based design in qualitative research methodology was implemented. The study discovered that the libraries under investigation provide records in both printed and electronic formats. These documents included leave requests, disciplinary action logs, periodic appraisal, promotion, and confirmation records, physical examination results, records of staff release and retirement, Corps member records posted to the library, records of internally generated revenue in the library, staff passports, staff members' copies of employment letters, staff members' credentials, staff shift duty rosters, staff meeting minutes, etc. Records can be temporarily stored on top of tables, in cabinets, file cabinets, wooden shelves, steel shelves, drawers for flat files, and computers for electronic storage. Among the difficulties encountered are insufficient funds, lack of space, a weak electrical supply, low employee morale, a lack of staff training and retraining, and a lack of strong backing from upper management¹⁵¹.

In the same vein, a researcher conducted literature review to investigate the application of modern technologies in managing records in public libraries. The study established that although public libraries acknowledge the importance of modern technologies such as blockchain, cloud computing and Internet of Things in managing their records, these technologies are being slowly adopted due to lack of information technology infrastructure, technical support, and knowledge and skills. Therefore, all these challenges made it difficult for librarians and information professionals to maximise the benefits of these technologies and they struggle to see how these technologies can be incorporated into their institutions. Public libraries thus need to better understand best practices for records management, which may go a long way in influencing library policy to support records-management processes. The study recommends that public libraries consider exploring collaborating with other sectors such as archival services to implement modern technologies for the purpose of managing records.

One of the emerging technologies that can be applied in digital records management is artificial intelligence (AI). While AI has taken effect in developed countries, researchers are still investigating the level of awareness in developing countries. Scholars' understanding and impression of artificial intelligence in the administration of Nigerian university libraries are consistent with this. Based on a survey design, the study combines qualitative and quantitative methods. The study's conclusions showed that, despite their awareness of the use of AI in university libraries, academic librarians' primary barrier to adopting new technologies is their fear of losing their jobs, even though they are aware that these innovations will facilitate effective user satisfaction. According to the survey, academic librarians should develop the skills essential to be relevant in this fourth industrial revolution by keeping up with the latest technological advancements¹⁵².

2.3.2 Data Literacy Skills and Digital Record Management Practices

Data literacy is an emerging in librarianship, particularly in sub-Saharan African countries such as Nigeria. Probably because of dearth of literature, researchers interested in data literacy often examine a broader term of digital literacy skills. One of such studies examined digital literacy skills of librarians in Nigeria. The researcher made use of an online questionnaire to collect data from 111 librarians working in both public and private universities in Nigeria. The study identified the digital literacy competencies that librarians assessed as somewhat and lowly, as well as those that they ranked as very high and high. The knowledge and abilities that participants assessed as neutral or poor, in addition to those that they ranked as extremely competent, were also disclosed by the study. The librarians assigned a neutral or poor rating to their understanding of network and system security, their aptitude for using firewalls and filtering routers, and their capacity to restrict access to digital information by password or IP-based access. In

general, the research findings indicated that over 50% of the librarians assessed their proficiency in digital literacy as moderate. A small percentage of librarians thought highly of their digital literacy abilities¹⁵³.

In another study conducted in Jordan, researchers conducted a study to evaluate the degree of digital literacy among Jordanian academic librarians. The study also looked into how digital literacy affects Jordanian librarians' adoption of technology. A survey instrument was created and employed to gather the necessary information from Jordanian university libraries. The findings show that the librarians have a high degree of digital proficiency. The outcome also demonstrates that librarians' primary obstacle to acquiring the necessary skills is money. Most importantly, the degree of digital literacy has a beneficial impact on how well Jordanian academic librarians adopt and use technology. It was observed that elements such as sex, age, experience, specialisation, and kind of library were unaffected by variables including sex, age, experience, specialisation, and kind of library¹⁵⁴.

Furthermore, researchers examined digital literacy skills and job performance of librarians in state-owned Universities in Rivers State. The test of hypotheses established that there is a significant relationship between digital literacy skills and the job performance of librarians in the study. Hence, if acquired by all the librarians it can positively influence their job performance and increase patronage of users in the library¹⁵⁷. Based on the findings, it can be assumed that data literacy skills of librarians would enhance their effectiveness in digital records management while librarians with poor data literacy skills may not be as effective in digital records management.

Data literacy skills was also found relevant in a related study that examined digital literacy and job performance of librarians in Imo State, Nigeria. According to the survey,

among the digital literacy skills that 21st-century library employees should have to improve their effectiveness on the job include electronic mail, social networking, PDA use, mobile phone use, Internet browsing, and computer operations. The survey also discovered that library employees learn digital literacy abilities through formal education, attending workshops and seminars, self-study with the help of user guides, peer assistance, self-study, management training, and IT courses. The 21st-century library staff has performed better on the job thanks to digital literacy, which has improved virtual reference services, accelerated the acquisition of online information resources, established and maintained an online catalogue database, and improved user Internet search activities¹⁵⁸.

Identifying (creation), classifying, prioritising, storing, securing, archiving, preserving, retrieving, tracking, and destroying unnecessary documents are all part of records management practises⁹⁴. A particular author asserted that "it is important that Organisations/universities have good records management practises in place for all media across all business units⁹¹. To achieve the objectives, they can imprint certain behaviours on the Organisation's memory (master plan).Universities and organisations produce a significant number of paper-based and digital records and information. Records/information must be collected, used, and stored/preserved in an organised way that protects its integrity and complies with legal and financial obligations in order for the records management system to function well. If the registration staff follows the worldwide technological trend and is computer savvy, or has the necessary computer abilities to manage their records using a computer, then reaching this height would be feasible.

A computer is any device that has the ability to automatically accept data, process the data using a series of steps, and then output the results. Because of this, a computer is a necessary instrument for increasing task execution efficiency and precision¹⁰⁵. According to a scholar, accuracy is practically guaranteed when a computer is programmed appropriately and inputs are entered accurately. Because a computer follows instructions precisely, it can perform the same tasks repeatedly without making mistakes⁶. The speed of computer operations is also much more reasonable than the pace of manual processes. Computer literacy has advantages in university registry communication, including quick and simple functioning. Additionally, it benefits from the distant creation, sharing, preservation, and use of scholarly material. The university registration personnel can perform their normal tasks more quickly, accurately, and easily thanks to computers. It has also evolved into a vital instrument required for the execution of every ICT programme. Computer literacy is "understanding certain essentials of computer usage, such as to type, save and open a file, use word processing software, send and receive email, etc. Instead of feeling apprehensive or afraid around computers, it means having some level of comfort². Having computer skills, expertise, and confidence can help you compete in both internal and external sectors.

With the spread of information and communication technology (ICT), which is increasingly branded by technology-driven communication, the world has become a vast, interconnected village. Since technology continues to have a significant impact on people's lives, it is anticipated that having a working knowledge of it will eventually be necessary for almost everything that individuals do in their professional, social, and even personal lives. If workers (registry staff) are to handle their students' records and/or live in a

knowledge-based society, they will need computer literacy abilities. This without a doubt shows that computer literacy skills are necessary for an individual to manage or maintain a suitable record effectively and efficiently. Interestingly, it appears that many of them lack this capability, which frequently leads to the loss of records and/or a delay in their retrieval (for instance, student results, transcripts, and other official records). On the other hand, all registration personnel should be able to use this computer to read their emails, check the internet using their browsers, and handle any issues related to their duties. As a result, register staff members require Internet abilities in order to conduct research, send and receive information, and communicate with management, students, and customers online.

In light of the discussion, it is noted that records are damaged, lost, unrecoverable, and improperly stored; in addition, many of the staff members responsible for maintaining records lack proper training with the use of computer facilities and are unable to handle new technologies to increase efficiency and to promote their job performance³. The registration staff appears to have been given greater responsibilities, which leads to job stress and improper communication when doing their duties, both of which eventually have an impact on their performance. The methods that librarians use for data management have not yet been the subject of any study. However, a case study by Gunes, describes using the data life cycle as a framework to apply best practises for data management to library data⁴³. In contrast, the methods used by researchers to manage their data have received considerable attention, particularly among librarians⁴³. Although studies have primarily focused on issues that are not covered in this review (such as data format, data size, storage, and backup), there is some knowledge concerning privacy and security, which is more pertinent to this review.

A scholar asserts that "students were interviewed generally but not proactive or very engaged in taking action to ensure that good management or security practises were being followed¹⁴⁵." In a similar manner, a study finding discovered that "students did not consider data security an issue and felt that they had adequate protections in place" and that the students need to build skills to "understand privacy issues associated with data"⁵⁰. 15% of respondents in a study at VirginiaTech of 416 researchers from a variety of fields reported having trouble "dealing with sensitive data, data transmission, and encryption"¹²⁰. It was highlighted that a great summary of the present state of data administration, stating that although researchers "believe they are managing data well, their research is not without management issues"¹²⁰. A growing focus on research data management in academia and university libraries is the result of data-intensive science, as well as requirements for data management plans and open data from research funders. Academic librarians frequently participate in the research process, first and foremost within the context of research data services (RDSs), as the latter's role is evolving¹³⁷. As a result, it should come as no surprise that academic library work is increasingly focused on supporting data-intensive research, It is in focus specifically because it offers a possibility to improve the current situation, in which teachers and researchers view the library simply as a source of books and papers, rather than a location where real-time research support is available⁵². If it's important to academic librarianship's the past and present development paradigms, as defined by the fact that people can have a better grasp of the function university libraries play in the data-intensive world. After World War II, the first paradigm—known as the "Ownership" or "Collections" paradigm—evolved and peaked in the 1960s. It was designed on the premise that campus library systems would be able to compile all papers necessary to fully meet the

needs of the institutions for scholarly research and classroom instruction. Such support sufficiently allowed for a wide range of interpretations, but it proved to be unsustainable and was replaced by the 'Access' paradigm, which from the late 1970s to the end of the 1980s paid more attention to and used resource sharing.

The 'iAccess' paradigm emerged as a result of widespread access to digital content, particularly the availability of electronic full text for serials, which rendered traditional ownership impractical. Recent developments in social media have given us the chance to add a social dimension to iAccess, creating the "sAccess" paradigm in the process. While social media clearly plays a part in Research 2.0, it can be challenging to separate the effects of social media's presence from the growing significance of data. University libraries are impacted by social media in several ways. It generates massive amounts of (big) data that may be studied, shared, and used primarily by social science researchers¹³. Even though there is less confidence in social media channels for scholarly communication, it nevertheless alters how research is conducted¹⁰⁶. Determining how much data-intensive research applies to iAccess and sAccess is therefore a difficult task. In any case, it is influenced to some extent by both perspectives. Data governance (DG) is a topic that the corporate community is interested in, as was already said. As a result, it is rarely covered in LIS literature.

The research of luyombya on data management in libraries is a significant exception⁷². The tight linkages between DG and the business sector are seen in Smith's analysis of definitions of data government. Smith emphasises that "the process of data governance is to exercise control over the data within a corporate alignment" in addition to offering a set of concepts that tie it to businesses, enterprises, and corporations. Although DG garnered

attention mostly in the commercial sector, it appears obvious that the academic sector, librarianship, and library and information science should also pay attention to it. Dutt,³³ asserts this necessity, albeit quite subtly, by arguing that in order to transform data governance into a catalyst for business innovation as opposed to a barrier to data, the position of the data governor must change to become more like to that of a data librarian. The processes of finding and organising the finest accessible data can be made possible by providing information technology as a service. The term "data governance" can be used to describe organisational structures, laws, regulations, and standards as well as decision-making authority, accountability, and enforcement procedures. DG improves decision-making and safeguards stakeholder needs.

It supports the adoption of standard methods for handling data challenges and lessens operational friction. Through the coordination of activities and by providing transparency of processes, data governance also contributes to the development of standardised, repeatable processes, cost reduction, and increased effectiveness. Integrity, transparency, and auditability are its guiding principles (DGI). DG also defines decision domains, or the choices that must be made in order to effectively manage and use the Organisation's resources. By identifying who has the authority to make decisions in a particular organisation and who is responsible for making decisions connected to data assets, it also establishes the locus of accountability for decision making.

It is established that "people who informally already have a level of accountability for the data they define, produce, and use to carry out their jobs or functions" may be necessary for effective data governance. Although good governance technology makes data transparent, gives it accountability, and helps identify areas, where performance can be

improved, it still depends as much on organisational culture and correct and efficient governance⁸⁶. Accountabilities are defined in a way that introduces checks and balances between various teams, between those who create and collect information, others who manage it, those who use it, and those who introduce standards and compliance requirements (DGI). These main components of accountability are stewardship and standardisation. Some clarification is necessary because stewardship is mentioned in this list and several resources linked to research data management, and because it is sometimes used synonymously with DG¹³. Data stewards serve as the voice of others and guarantee that data-related work is carried out in accordance with the policies and practises established through governance since data stewardship is concerned with looking after data assets that do not belong to the stewards themselves. Data governance, in contrast, is a comprehensive process that unites cross-functional teams (including data stewards and/or governors), in order to create interdependent rules, address problems, and offer services to data stakeholders¹²⁶. Data governance requires precise descriptions of its goals, procedures, and metrics in order to be effective. It must establish its own procedures and guidelines. There must be established communities of practise for governance, stewardship, and information management in addition to roles and responsibilities for all data governance roles. Additionally, change management procedures must be implemented, and last but not least, there must be incentives for good data governance behaviour.

Furthermore, because it helps to organisational performance through repeatable and legal practises, data governance shouldn't be considered optional. Governance can be related to managing information technology, people, and other tangible resources in the sense of managing, monitoring, and assessing diverse parts of an organisation. Since data is

ubiquitous, DG operates horizontally. Data management involves defining the data and determining how to use it, whereas data governance involves integrating the data into the organisation and appointing people to monitor the management of the data processes. Metadata, unstructured data, registries, taxonomies, and ontologies must all be included in DG as well¹¹⁷. Big data is subject to the conventional DG concepts. Data from social media and the web, as well as machine-to-machine data, require particular consideration when it comes to big data kinds. Regarding the appropriate use of data, big data governance is particularly crucial. Underestimating data governance is one of the most frequent data integration errors in settings where big data plays a significant role. Although there are numerous ways that big data integration is different from traditional data integration, it nonetheless serves as an example of the complexity and significance of data governance¹²⁸.

Data integration is the process of bringing together data from several sources to create useful information. It combines both technological and business procedures. It facilitates the understanding, purging, monitoring, transformation, and delivery of data; as a result, it provides reliable data from a range of sources. By providing a single picture of these data, data integration addresses the issues associated with merging data of different provenances⁷⁴. DG, in the words of a researcher 'is like an elephant in a dark room'⁷⁴. Depending on where you contact it, you can feel it. Its tail feels like a snake when touched. It has a tree-like feel to it when you touch one of its legs. As a result, there are different cross-functional viewpoints on data governance. We will take these differences into account when coupling data governance with data quality and data literacy. The stakeholders of DG in research contexts include researchers, research institutions, funders, publishers, and the general public. Researchers' worries about losing rights and benefits are

also addressed by a thorough understanding of data governance. Because handling sensitive information necessitates not only creating rules and norms of practise but also encouraging cultural change towards greater data stewardship, governance structures are also required for managing data connected to human subjects.

Although data ownership is frequently confusing since having a stake in research data does not necessarily mean the person is the owner of that data⁶², data governance in this setting permits appropriate access and sharing⁷⁴. Librarians already have several DG skills, such as handling with licensing terms and agreements and understanding copyright⁶². Overall, data governance is where managing data begins. A formal data governance programme must include explanations for issues like availability and access possibilities, provenance, significance, and reliability. It is also necessary to provide coordinated, cross-functional methods and to support best practises as a shared obligation among all members of an institution. It deters the exploitation of institutional data assets and promotes the institution's own more efficient use of these same data assets⁶⁴. Although it is one of the most difficult problems of data sharing, understanding the nature of data governance is a prerequisite for RDSs and well-developed data governance is one of the requirements for open data^{62 135}.

Additionally, data governance "guarantees that data can be trusted and that people can be held accountable for any adverse event that happens because of poor quality¹²². Similar to this, it has been emphasised that part of governance is deciding who in the organisation has the authority to set criteria for data quality⁶¹. DG is about identifying who should make these decisions, whereas data management is about deciding the actual standards used for data

quality. DG formalises both the quality of the data as well as behaviours linked to its definition, creation, and use⁸⁴.

Similar to this, a white paper by Information Builders emphasises that data governance is an important part of any data quality management approach. The success of an information governance programme depends on robust data quality, which can be attained if we stop the spread of inaccurate or inconsistent data through ongoing analysis and monitoring, according to a different white paper titled Successful information governance through high-quality data (IBM). One of the pillars of the data-intensive paradigm of scientific inquiry is data quality. This is true even though data evaluation is challenging due to the need for in-depth disciplinary expertise, the time and money required to manually assess data sets, and the nascent state of automated methodologies¹¹⁹. The issue of data quality has received some attention in the academic community, so a thorough further analysis is not required. But let's go through its most important characteristics once more: accessibility and discoverability, reliability and validity, acceptability, accuracy (which includes correctness and consistency), application, integrity, comprehensiveness, understandability, and usability. It is also obvious that university libraries' research data services, which offer data quality auditing and verification services to the research community, might play a significant role as data quality hubs on campus⁴³. Data librarians would obviously need to take care of the data's accessibility, but they would also benefit from knowing how to evaluate the authenticity, integrity, and accuracy of digital objects throughout time.

A researcher listed some additional aspects of data quality more recently, including coverage, relevance to the stated research question, format, naming conventions, dates of creation and

update, and use of fields and units⁶⁷. They also draw our attention to a set of data governance-related quality control characteristics that address the question of whether quality control is expressly stated by looking at who is in charge of doing quality checks and the procedures they employ. In addition to regulations relating to roles generally, obligations relating to suitable data standards and regulated metadata environments are also necessary for effective data governance. Since managing metadata makes it possible to, among other things, establish the provenance of data, which makes it possible to secure its quality, it is one of the core quality-related procedures of data governance. This accident may have been prevented if proper consideration had been given to data governance principles, the relevant details, and the use of data literacy skills. Although data literacy is still in its infancy, it is being more seen as an essential skill for information professionals supporting data-intensive research. On the other hand, there is yet no agreed-upon vocabulary in the field of data literacy. Both scientific and research data literacy exist²¹.

A researcher noted that data information literacy differs from a narrower definition of data literacy, which is the capacity to correctly read graphs and charts, draw accurate conclusions from data, and identify when data is being used in misleading or inappropriate ways²¹. In the following, naming distinctions will not be taken into consideration, and we will choose the word "data literacy" in the first instance since it is clear-cut and simple Mendez, ⁸¹and it does not appear to have the restriction noted by scholar ²². In addition, definitions and competence lists exhibit convergence even though the terminology are different. An author gave a clear definition of data literacy as the capacity to comprehend, utilise, and manage data¹³.

As was already said, a researcher provided a much more thorough definition of data literacy, defining it as the capacity to process, sort, and filter enormous amounts of information, which calls for knowledge of how to search, how to filter and process, as well as how to develop and synthesise¹⁴². It is obvious that these qualities are nearly identical to those listed in the well-known and widely accepted definition of information literacy, which includes the skills to identify information needs, locate information, evaluate it, and use it to solve a specific problem. Although information literacy appears to fundamentally enable us to process all sorts of information content efficiently, it must be noted that the community of practise for data librarians is different from that of information literacy^{13 21}. Several authors emphasise the similarities to information literacy, which must be included. Information literate people acquire, preserve, and transmit data in addition to text, according to the Australian and New Zealand Information Literacy Framework. Information literacy learning outcomes include presenting, assessing, and analysing qualitative and quantitative data, according to Andretta ⁹. Even though the subject of data literacy is more fragmented than the field of information literacy, another author contends that data literacy education should extensively draw from information literacy education¹⁹.

Another author states that reference librarians routinely hold information literacy sessions that enlighten the users on the available data resources for their particular study fields, albeit not explicitly mentioning data literacy¹⁴². Information literacy and data literacy are parts of a scientific-investigative educational continuum¹¹. This gradual educational process starts in academic, is perfected and specialised in higher education, and then becomes a part of lifelong learning. Another researcher also mention the tight connection between information literacy and data literacy while outlining a new framework for data literacy

education¹⁴⁵. Beyond defining, using, and analysing a variety of information literacy standards, an author identified a number of skills, some of which unmistakably trace their roots back to the most widely used definition of information literacy, the Information Literacy Competency Standards for Higher Education^{17 10}. Determining when data is needed; Accessing data sources appropriate to the information needed; Recognizing source data value, types and formats; Critically assessing data and its sources; Knowing how to select and synthesize data and combine it with other information sources and prior knowledge; Using data ethically; Applying results to learning, decision making or problem-solving.

They also stress the need of being able to recognise the environment in which data is generated and consumed. They are in accordance with current conceptions of information literacy that include a grasp of how information is produced by bringing up these two key elements of the data lifecycle⁸. Data literacy, Based on some authors assertions, is the capacity to comprehend data and apply it wisely to guide decisions⁸⁷. In doing so, they emphasise the value of data literacy in helping decision-making. Since they are aware that data governance may be connected to the corporate world, they raise the topic of data literacy. According to the Association of College and Research Libraries, data literacy is the ability to find and evaluate data, place emphasis on the version of the given dataset and the creator of it, and consider issues related to citation and ethical use of data. The ability to access, interpret, critically evaluate, manage, and ethically use data is what is meant by the term "data literacy," which can be defined as a specific skill set and knowledge base that empowers people to transform data into information and into knowledge that can be put

to use ³². Data literacy is one of the RDS activities that helps researchers develop the abilities and knowledge necessary to manage data effectively ²⁸.

As a result, researchers can conclude that data literacy is connected to almost all RDS-affected operations and establish the basic framework for libraries' support of the data-intensive research paradigm ⁴⁹. Data literacy is broad and sweeping since RDSs clearly address all of its facets. It is intriguing to investigate whether there is such a thing as generic information literacy when taking into account how closely data literacy resembles information literacy. Data information literacy practises must be in line with present discipline practises and cultures, claim Carlson ¹¹. Information literacy has a distinct personality in the social sciences and the health sciences, according to a bibliometric study by Pinto, Pulgarin, and Escalona ⁸¹. The application of information in many academic contexts is generally highlighted by contemporary approaches to information literacy ³⁸. The case of chemical information literacy is particularly intriguing in this setting. While chemical information literacy does have some generic components, historical analysis, it is more firmly domain specific than any other subject¹⁵.

Some researchers emphasise that information literacy education must become placed within the socio-cultural practises of the disciplines by expanding its attention on epistemology and met narrative in order to meet the demand of the information age for skilled handlers of information¹⁹. Therefore, inviting students into disciplines by librarians or disciplinary faculty is necessary for really placed information literacy. As a result, information practises within a discipline must be understood as part of information literacy. Discipline-specific data literacy abilities are also thought to exist ⁶¹. Data literate individuals must be able to choose, synthesise, and combine data with other information sources and existing

knowledge, among other necessary abilities and skills. The activity of quality evaluation, which includes evaluating the reliability and accuracy of the data sources, is likely the most significant activity in this matrix. When we gather data, evaluation is already evident, and data interpretation makes explicit the procedures that also define information literacy. Even data visualisation involves analysing and evaluating graphical data representations.

A researcher who collated the opinions of both staff and students, also show that data quality has a significant impact in data literacy¹³. In general, the professors in this survey anticipated their graduate students to be competent to manage and handle data. Graduate students' key tasks and data management shortcomings included quality assurance. Quality control is viewed as a combination of technical skills, which manifest in equipment familiarity, discipline knowledge, and a metacognitive process. Data literacy can be viewed through the lens of the Information Literacy Competency Standards for Higher Education, even if they have been partially replaced by the Framework for Information Literacy for Higher Education⁷. Determine whether the offered data is reliable and/or whether the data repository or its members provide a level of quality control for its content. This is a requirement of Standard Three of these Standards (Evaluate information critically). Managing metadata is one of the essential quality-related tasks of data governance, as was before mentioned. At the same time, data literacy practises should incorporate the evaluation of metadata as a component of quality assurance. In this context, quality assurance entails using metadata to make it easier to understand potential issues with data⁷¹. Education about data literacy serves two purposes. To ensure that students, instructors, and researchers become data literate science workers is the first goal,

which is rather self-explanatory. By putting out clear signals that address the demands of our stakeholders, as highlighted by some researchers, we must increase teacher, student, and administration understanding of data literacy. These mails may have originated in corporate settings in some cases¹³. Delivering business communications may potentially increase their trustworthiness.

Education of information professionals is the second objective ⁶². The fact that teaching teachers data literacy is a sensitive subject makes it difficult to impart it to them. As noted by some authors, faculty members don't typically like to be told that they are going about something incorrectly¹⁷. Another author also affirms that it is challenging to communicate with academics, particularly if one do not have a thorough understanding of their life¹⁵. Due to their busy schedules and expertise, faculty members typically need different ways to instruction than students¹³. Data literacy skills empower teachers to leverage data effectively in their instructional practices, monitor student progress, differentiate instruction, and collaborate with stakeholders. By utilizing data, teachers can make informed decisions, improve student outcomes, and contribute to a data-informed educational environment.

2.3.3 Institutional Support and Digital Record Management Practices

There is a general consensus that institutional support is essential to ensure that employees perform to their best. This is often held to be true in university libraries which has prompted studies on the influence of institutional support on the effectiveness of various library activities such as digital records management. In one of such studies researchers focused on institutional support and job satisfaction of library employees in federal universities in North-east Nigeria. The research adopted a descriptive survey

research design and the population for the study is the 314 library employees of federal universities in North-east Nigeria. A total enumeration technique was used to cover three hundred and fourteen (314) employees. The results showed that institutional support of public universities have provided job satisfaction of library employees in North-east, Nigeria ($R = 0.748$, $R^2 = 0.560$), F (indicated df) = 387.021 Sig. = 0.000). The study concludes that institutional support for job satisfaction of library employees is inevitable¹⁵⁸. This suggests that, with institutional support, librarians are more likely to improve their dedication to digital records management activities.

Capacity development is another form of institutional support. A scholar examined librarians' capacity development programmes and job performance in state university libraries in South-South, Nigeria. The result revealed that, there were weak but positive relationships between on-the-job, in-service, off-the-job and mentoring capacity development and librarians' job performance in State university libraries. It was recommended that management should encourage more practice of internal rotation of librarians within the system in addition to proper orientation and delegation of responsibilities and that effective mentor and mentee relationship practice in university libraries should be strengthened. This will give room for the active development of successful successors, amongst others¹⁶⁰.

Several academics and organisations have defined the term "record" in their works. A record is defined as information that is made, received, and preserved as proof and information by a person or organisation in order to comply with legal responsibilities or conduct business³³. This suggests that an institution keeps records as part of its daily operations since, according to a scholar, records may be created during an activity or later

as a result of deliberate record-keeping⁹¹. On the other hand, another author characterises records as an expansion of human memory that are consciously created in order to preserve information, document transactions, express thoughts, validate claims, advance explanations, offer reasons, and enhance long-lasting proof of events¹⁷. Records management is therefore a crucial information tool since they convey information about an action, offer proof that it took place, and act as a standard by which decisions are made. Researchers provide proof for this claim by noting that records are precious assets that should be handled and safeguarded. Records are crucial for the performance of organisations because they support corporate operations and act as vital proof of organisational transactions, decisions, and activities⁸⁷.

It was noted that records help organisations deliver services consistently and fairly, conduct business in an orderly and efficient manner, support and document managerial decision-making and policy formulation, provide consistency, continuity, and productivity in management and administration, and meet legislative and regulatory requirements¹⁹. Records contain an Organisation's history, and if records are not correctly and methodically maintained, history cannot be adequately transmitted to future generations. Effective records management can preserve and improve information, which is a crucial resource for both the public and private sectors⁹⁹. Good records management for institutions helps produce positive results by making information readily available. It improves an Organisation's ability to provide services and grow. Records management ought to be an integral aspect of an Organisation's strategic function.

Organisations use records to support accountability when they want to prove that they have met their obligations or complied with best practices according to the established

policies⁸². Records which are well managed as part of an appropriate records management programme will help an organisation to conduct business in an efficient, accountable manner, deliver services consistently, support managerial decision making and transparent policy formulation and ensure continuity in policy execution, management and administration. Effective records management will help the organisation to respond to planned or unplanned events such as audits or disasters. It will also protect the interest and rights of present and future stakeholders, including employees, clients, government policy makers, historians and citizens maintaining corporate memory. It will help meet regulatory and audit requirements; provide evidence of Organisational activity for litigation support. An effective management programme will ensure that records are available for use when needed, that privacy and confidentiality are maintained and that redundant records are destroyed. As indicated from the benefits accrued from proper management of records, organisations have a mandate to ensure proper management of records to all their business process and systems so as to enhance quality service delivery to its clients.

A researcher states that information is a key business resource for universities to aid competitiveness in higher institutions⁹⁶. Studies show that sound records management is the foundation for good governance in a democratic society¹⁵. Good governance is characterized by transparency, accountability, due process, compliance with the set statutory framework and information security¹⁴³. It was also opined that reliable, timely and accessible records should avail information about administration actions such as resources received, committed or spent which facilitate and simplify accountability⁸⁷. He further states that ineffective records management leads to files being piled in different

offices and corridors as a result of dumping difficult personnel to the records management unit and lack of continuous training, lack of policies, procedures and standards.

It is necessary to have formal training in managing records in order to manage the control, custody, care, and disposal of the institution's records effectively for higher-quality services and conformity with the law and international standards (ISO). In institutions, the amounts of electronic and paper records are rising steadily. Most institutions encounter a large percentage of this continuous growth of records each year, and based on observation, there is a lot of doubt regarding how records should be managed in today's offices and companies. This is demonstrated by the fact that the majority of businesses seek the assistance of consulting companies that provide records management services in order to streamline records management and provide training through workshops. Good records management practices are an investment for Organisations, even though they could be seen as an expense²⁸. If the program is to continue receiving financing and support, it is imperative to show measurable returns on investment. When managing records, handlers should be aware of the institution's operations, goals, and objectives, as well as how keeping records helps the institution achieve these objectives. A researcher reiterated that understanding the Organisational operational environment is a crucial component in creating an efficient records management program⁹⁶. An institution may choose to maintain its records centrally, decentralized, or in a mixed fashion. This suggests that offices and departments at universities should be in charge of taking good care of the records they produce. This is crucial since keeping track of records and arranging them makes it easier to locate information and records when needed.

Universities are complex Organisations because they carry out a variety of activities, such as teaching, research, and consulting, which are done at various levels, in various departments, and in various offices, but which should adhere to the Organisation's core business and its objectives. Institutions frequently save a certain set of documents that are representative of their type of operations and activities. According to a scholar, who used the records continuum model, integrating recordkeeping into corporate and societal processes and goals is especially important for institutionalizing the recordkeeping profession's function⁷⁰. These documents frequently serve to define the institution and show that it is carrying out its mission. Higher education institutions are also required to maintain a specific set of records in order to make day-to-day operations easier. Functional analysis, a procedure, can be used to identify these .Functional analysis offers a methodical approach to identifying the main operations and transactions associated with an Organisation's primary functions as well as the supporting documentation. As a result, records are immediately linked to the business processes and activities that produced them ⁴¹.

Records management is the management science that regulates the number, quality, and costs of records⁵⁶. It also includes the operational system procedures, physical location, technological infrastructure, and personnel needed to manage records. In a similar line, it have proposed that good record-keeping practices significantly improve the efficiency of university administration³³. The proper management of records, which will result in economy and efficiency in their creation, use, maintenance, and disposition, is rarely considered the top priority of the university system, despite the irreplaceable value of records and the enormous amount of money spent on their creation and maintenance ⁷⁵. Two authors cited the books system, retention, disposal, and preservation as the essential components of

records maintenance. In light of this, this study aims to present empirical data on the management of records in federal and state university libraries in Nigeria's south-south region⁹³.

Records are information that is received and preserved by a company, institution, Organisation, or individual in order to fulfill legal duties or conduct business⁸³. Regardless of the physical shape or features of the medium, these are typically documents that serve as proof of transactions that were made or received in accordance with legal requirements. These recorded data could be found on paper, audiotapes, videotapes, microfilm, pictures, slides, and computer-readable media such computer tapes, disks, and optical and compact disks. But records management is predicated on the idea that records need to be managed in the same way that other resources for higher education do. As a result, records management is a crucial information tool for relaying information about activities, providing proof that they took place, and acting as a standard against which choices are made. Two authors argue that records are valuable assets that must be maintained and safeguarded in order to achieve this. Records management is crucial for Organisational success in addition to providing crucial proof of Organisational transactions, activities, and decisions⁹³. It also helps corporate operations.

Records management could refer to a management science that deals with regulating the number, quality, and cost of records as well as the operational system procedures, physical location, technological infrastructure, and personnel needed to manage the records⁸³. Additionally, records management includes planning and developing classification schemes, operating and maintaining files and other documents, preventing an excessive proliferation of records, planning and maintaining record rooms, and creating

indexes in addition to the creation, control, and disposal of records. When records are correctly kept, it may greatly improve the management of the institutions that keep them. Therefore, records administration ought to be an integral aspect of an Organisation's strategic function. The goals of records management include establishing policies and procedures, assigning roles for records management at various Organisational levels, establishing best practices standards, processing and maintaining records retention and disposal policies, processing and maintaining records in safe and secure storage, implementing access policies, integrating records management into business systems and processes, and assigning, implementing, and administering⁶.

A research that evaluated the Federal University of Technology, Minna, Nigeria, and Ibrahim Badamasi Babangida University, Lapai, Nigeria's records management systems⁸. Four (4) research questions were put forth to help with the study's execution. The 88 employees who made up the study sample population included 42 employees from the Ibrahim Badamasi Babangida University in Lapai and 46 employees from the Federal University of Technology in Minna. Questionnaires were utilized as the data gathering tool. Frequency and percentages were used to respond to the research questions. The study's key conclusions included: inefficient record management procedures, inept staff, subpar infrastructure, and frequent power outages. Based on these conclusions, it was suggested that efforts be made to offer a standby generator as a backup power source, that staff be trained to manage university documents and that enough funding and infrastructure facilities be made available. To assess the degree to which information users' behavior and effective records management contribute to the success of Polytechnic, Ghana, in order to maintain competitive survival.

Study at the Africa University in Mutare, Zimbabwe, examined the effectiveness of e-records management practices with a particular focus on the Southern African Region¹⁴¹. According to the study's findings, although there were e-records management rules and procedures available a divergence from what had been seen in public universities in Nigeria and Malawi the personnel did not always adhere to them as a result of inadequate monitoring. The institution may encounter difficulties akin to those that beset institutions that operated without policies if established policies and procedures are not followed. The study also revealed that e-record backups were not consistently made, with the results showing that 6 (24%) of the respondents made backups daily, 12 (48%) made backups weekly, 6 (24%) made backups monthly, and one respondent (4%) made backups annually. Positively, it was mentioned that Africa University had put security measures in place to protect e-records. Most significantly, it was found that entry to the server room was rigorously regulated. Despite the fact that this was the case, it appears that no awareness-raising efforts about the use of security measures were made, as the majority of respondents (14), or 56% of them, were unaware of their use¹⁴¹.

Examined closely at the goals of records management, the records life cycle, and electronic records management systems. A sample size of 30 respondents was chosen using simple random selection. According to the survey's findings, Ho Polytechnic in Ghana is a postsecondary institution that employs effective records management procedures. Additionally, it was noted that the institution was transitioning its manual records management system to an electronic one that made use of computers and the Internet. As a result, users can finish their work quickly and submit it. The electronic books system also shields users from making critical errors that could harm the institution's operations and

reputation. A scholar investigated how well-managed records help the operational activities of higher education institutions⁹². The Kenyan institution of Moi University's records management policy was established using a case study research design. 111 participants in the study were selected from the main campus. The sample size of 78 respondents, including 6 top management representatives, 22 action officers, 6 records supervisors, 4 auditors, 30 records staff, and 10 secretaries, was purposefully chosen based on the respondents' roles. Some of the respondents participated in interviews while others completed questionnaires. Approaches to quantitative and qualitative data analysis were both used.

The analysis found that there was no clear records management policy at the university. Therefore, it was advised that a formal records management program be established with clear policies, infrastructure, staffing, procedures, and credentials for records personnel. This program should also include policies that were developed and put into practice. A researcher¹³ claims that records management entails controlling the creation and use of forms, correspondence, and other records, setting up books and indexing systems, and other methods to ensure easy, quick access to the information in records. It also involves adopting and using modern technology for information creation, storage, and manipulation, particularly micro-film and automated data processing systems. It also entails microfilming of selected paper records for security, ease of access, and diversion.

As it was said in the introduction, insufficient financial controls as a result of incomplete financial record keeping have been the subject of Auditor General Reports in a number of nations. Poor records indicate financial dishonesty and hence poor accountability. Poor financial management is a result of poor records, as discovered by Barata and colleagues

in 2017. Financial records are frequently found to be disorganized in the ESARBICA region's multiple nations, which has made it more difficult to audit accounts effectively and produce evidence to identify and punish fraud. Weak financial record-keeping systems in several nations have been linked to unauthorized spending, fraud, and misappropriation of public monies. It has been discovered that there are significant issues with the administration of public sector data, particularly financial records, as demonstrated by case studies in Tanzania and Namibia, among other places¹⁴⁰. For instance, without records, fraud cannot be established and effective audits cannot be performed. Wallace⁸¹ contends that due to shoddy record-keeping in the banking, investment, and auditing industries, financial, legal, operational, and reputational concerns have all been established. Failure to follow rules for records-based accountability has been linked to obstruction of justice, penalties, impartial investigations, and even Organisational collapses⁸¹.

It was discovered in South Africa that due to improper record-keeping, the Auditor General's reports contained feelings of financial disarray and misappropriation of taxpayer funds. Reports revealed that numerous departments were providing false and unreliable information, making it difficult to find any proof²⁶. A scholar reports that corruption was reportedly present when identity cards (IDs) were issued to employees in South Africa. In his presentation on the condition of archives, the Chief Director of the National Archives of South Africa focused on challenges connected to the protection of human rights, governance, accountability, anti-corruption, and financial management, all of which call for accurate record-keeping⁷. This illustrates the significance of records for financial management and accountability. For the fiscal year that ended in 1998, Namibia's Auditor General found 73 instances of inadequate record-keeping to be cause

for concern⁷⁷. Most will have improper and unauthorised spending and lack any payment vouchers or other documentary proof to support the legitimacy of the spending. It is possible that fraud and financial embezzlement occurred in this situation. The situation is not unique to Zimbabwe as it found a similar situation there in which government entities had poor record-keeping, which made them a haven for fraud and corruption and put their reputations at risk as well as legal and financial risks^{14, 8}.

In general, there is still a deficit in the body of knowledge on the management of financial records in the area, and specifically in Botswana. The IRMT has made significant contributions to the administration of financial records through consulting services, educational resources, and case studies that are accessible online at www.irmt.org. Similar literature on records management procedures in various Organisations is available in Botswana as it is throughout the region, and it presents the same issues and problems. According to a literature, Botswana's approach to records administration is still fragmented due to the absence of a national records management strategy, which is currently a major concern⁸³. For, instance, some scholars draw attention to unprocessed record backlogs and subpar storage facilities. The writers have emphasized the under-reported management of specialized records, such as legal records, and have recommended for their efficient management. This implies that despite being crucial to governmental operations, financial records, like legal documents, have likewise received little attention. Since they are all covered in the introductions of the literature that is now available, all the records management issues that have been raised in the literature are not new²⁹.

Financial management in Botswana is governed by the Finance and Audit Act of 1970 and the requirements of the Constitution. This legislation outlines the management and control of public funds as well as the audit of public accounts. This explains in detail how the system of public finances should function. According to Section 7(a) of this Act, the Permanent Secretary, who is one of the accounting officials, has the right to inspect any funds, supplies, papers, or records in order to verify that the financial regulations and instructions are being followed. According to Section 12(2) of the Act, receipts should be used for recording deposits. It is becoming abundantly evident that all Organisations must keep proper accounting records and be accountable for the accuracy and reliability of financial data ⁵⁵. Without a doubt, the annual financial statements are prepared using financial records. The Office of the Accountant General, which is in charge of responsible financial management and offers financial directives, is also established under the same Act. The Office is responsible for maintaining all government financial documents in a secure location and making them available as needed. According to a report, managing the consolidated fund is essential to achieving the goals of the government⁵. The Ministries of Finance and the Office of the Accountant General are in charge of managing the consolidated fund in Botswana and many other African nations. The Accountant General is responsible for maintaining records, combining government financial statements, and submitting them for audit to the Public Accounts Committee and the Auditor General.

Contrarily, in order to encourage accountability, Section 124 of the Constitution and Section 7 of the Public Audit Act (Cap 52:02) mandate that the Auditor General be in charge of auditing the financial statements. The Act stipulates that for the purpose of

conducting financial audits, the Auditor General shall have full access to any books and records maintained by any public officer. The Auditor General may demand anyone to deliver to him any books, records, reports, or other documents in their possession that he may deem necessary to examine in order to carry out his duties fully, as is further emphasised in Section 32(a). The Auditor General is also mandated by this Act to conduct performance audits of the public sector's handling of public finances in the majority of these jurisdictions, and she is given the authority to ask any government agencies for information or an explanation. The responsible Minister is then given this report. Additionally, Section 34 (2) states that the Accountant General must compile, sign, and send the accounts, financial statements, and any other papers to the Auditor General for auditing within eight months of the end of each fiscal year. The Public Accounts Committee of Parliament will question the accounting officers over the performance of their institutions following the release of the Auditor General's report.

Although these legal tools are available, Organisations nonetheless confront significant difficulties in guaranteeing compliance, financial accountability, and integrity. This means that Organisations must maintain a robust control environment in order to develop internal financial controls. The administration of financial records, which will be covered in more detail in the following sections, makes a significant contribution to these controls and has proven to be crucial for financial responsibility. Records can be an important tool for enforcing compliance with pertinent laws when kept appropriately. Consequently, it may be inferred that accountability and audit depend on efficient record-keeping, particularly record-keeping for financial. The auditing time is typically stressful for Organisations because records are only created at the end of the fiscal year, according to the studied

literature. It is common to hear reports of inadequate and erroneous records, late account closures, and bad internal controls. The necessary documentation to confirm payments are not attached to payment vouchers. According to some reports, they were signed six years after they were first written ⁶. In light of this, it's critical to always have information ready and accessible because auditing calls for accurate records.

It is also regrettable to see that internal audit departments are frequently not given the respect they deserve, and as a result, their recommendations for change are never put into action. Furthermore, their role is only seen as ceremonial, and no follow-ups are ever taken. In fact, the Public Accounts Committee's recommendations were ignored by institutions in Botswana according to the Auditor General's report for 2017, which is supposed to be audited before being submitted to Parliament. For instance, the report contained observations, but the accounting officers did not respond ⁶². It was discovered that accounting standards were lower than those of financial directives. Budget concerns exist because little attempt is made to provide performance information or feedback, making it difficult to determine whether or not public funds are being misused.

The literature has shown that records are crucial because they preserve the proof of business transactions. This is even more important for financial Organisations in charge of managing public finances so that the nation can advance. Despite this, it has also come to light that most public institutions' financial records are a complete mess. As in the case of Tanzania, the IRMT's study on financial records and information systems documents evidence of a major lack of accountability for public monies. Additionally, financial chaos and improper handling of taxpayer funds as a result of poor record-keeping have been covered in media articles ⁸⁷. Accordingly, it was found that, the absence of

trustworthy financial data in the instance of South Africa prevented the Auditor General from providing an opinion on financial accounts⁹⁶. In this situation, "expressing an opinion" refers to the auditor's certification that is included with the financial statement and states whether there are any misstatements. A barrier to financial contracting was established by information sharing flaws, according to a World Bank analysis. The World Bank claims that improved information exchange and access are necessary, especially in environments with high levels of corruption and weak property rights¹⁴⁰. Despite attempts, managing financial records still presents a number of difficulties, necessitating urgent involvement. In order to better manage their finances and assure account reconciliation, most organisations have turned to the implementation of financial management systems as a reaction to these difficulties. However, as shown by reports from the Auditors General, there is still room for improvement in the administration of financial information. There are numerous examples of documents being unavailable in Botswana, which causes non-compliance in most Organisations and necessitates action. Most Organisations do not handle their financial records correctly, and they are frequently not available for audits. Organisations struggle with financial management issues, including non-compliance with regulatory requirements and a lack of accurate and comprehensive records for audits.

Governments are heavily investing in the implementation of financial management systems as a way to improve managerial effectiveness and accountability, as demonstrated by Namibia's computerized budgeting systems ⁶⁶. Tanzania has also implemented an Integrated Financial administration System to enhance the administration of expenditures in the areas of general ledger, cash management, accounts payable, and accounts receivables. As evidenced by Tanzania, the approach can improve the ability to

track, manage, and control spending. To include records management into accounting system changes, the findings of the IRMT study on financial management systems should be adopted as a reference model. Additionally, it established a link between accounting records and fiscal accountability as well as a sound procedure for keeping track of financial records. If these systems are not audited, they are not a solution. Processing transactions at various levels and defining the roles and duties of every employee are necessary in such a system. There is a deficiency in this area in terms of capacity and knowledge for auditing computer systems. Systems for reliable backup are also required. Accounting systems can occasionally go down, as was the case with Organisations⁹⁹. Computerization cannot solve this problem on its own; records management difficulties must also be taken into account.

2.3.4. Institutional Support and Emerging Technologies' Awareness

The management, operation, and profit-sharing of a business are typically outlined in a written partnership agreement between two or more parties ^{65, 55}. However, Peterborough Public Library argued that the term "partnership" in the context of librarianship refers to a cooperative effort between the Library and a third-party institution, person, company, or community group. In ways that are beneficial to both parties, contributions from partner's aid in providing and/or publicizing events, activities, and practices. Contrary to the mergers and acquisitions that one typically sees as a key corporate growth strategy, where one company either merges with another or is acquired by another, libraries instead aim to forge partnerships in an effort to either expand a practice or service that isn't currently offered to their patrons or to address a stalled economy where funding has either been depleted or dissipated. This project has produced the joint-use library in a number of

instances all over the world, when one type of library collaborates with another to offer improved and cooperative procedures and services. Additionally, it has prompted new kinds of collaborations between libraries and other non-library organisations to guarantee that their purpose of service is essential even in difficult economic times (70). On the other hand, collaboration is a modern phenomenon that has arisen as a sustainable approach to fostering the growth of both individuals and businesses. This type of human interaction was developed to pool expertise, influence, and resources from individuals across Organisational boundaries in order to address problems that cannot be handled individually. Despite the crucial responsibilities that collaboration plays, there hasn't been much agreement or coherence in defining what it means across disciplines.

According to definition of collaboration, it is a process that combines working, learning, and sharing and is largely focused on the teaching, learning, and studying activities that take place amongst educational participants and allow for the activation and transfer of knowledge⁷². The American Association of Academic Librarians (AASL) stated the same thing when they stated that collaboration meant to "work effectively with others to broaden perspectives and work towards common goals." Additionally, quoted the Merriam-Webster Dictionary definition of collaboration, which indicated that it might indeed encompass cooperation or any deliberate endeavor to work together amongst institutions⁶¹. It is important to keep in mind that genuine collaboration frequently entails a larger partnership where the collaborators strive to achieve particular or common goals⁵⁹. The terms partnership and collaboration are frequently used synonymously in the field of library and information science to refer to the sharing of resources between two libraries or among a group of libraries. Particularly in university libraries like university libraries, the

significance of collaboration between librarians and academics in promoting students' academic success and research capacity has been acknowledged more and more recently. No one Organisation, body, or library is able to hold all the information needed by modern civilisation due to the proliferation of digital information. Libraries must and should ensure that everyone has full access to its information resources, including those with impairments, people who live in remote or rural locations, and people who are less well off financially. For collaborating libraries, collaboration and partnership can therefore lead to shared resources, shared responsibilities, cheaper costs, and improved outcomes ²⁶.

The start of a new revolution is Industry 4.0, also known as 4IR and era of emerging technologies is a combination of cutting-edge production processes and intelligent technologies that interact with both individuals and Organisations⁵⁸. The executive chairman and founder of the World Economic Forum, Klaus Schwab, coined the phrase "4IR," which denotes a society in which people move between online and offline reality while using linked technology to aid and control their live ²³. The emerging technologies are the fusion of the physical, digital, and biological worlds. The Internet of Things (IoT), genetic engineering, quantum computing, robotics, and other technical advancements are all included into it ⁴⁷. It serves as the impetus for a wide range of products and services that are swiftly becoming into requirements for contemporary existence. In the 20th century, no one could have imagined a voice-activated virtual assistant like Apple's Siri, tailored Netflix recommendations, or Facebook's capacity to identify your face and tag people in a friend's photo. All of these are made possible in the twenty-first century with the aid of the advanced and cutting-edge technology linked to the emerging technologies.

The founder and executive chairman of the World Economic Forum, asserted that as we move into the emerging technology era, there are megatrend drivers in the physical, digital, and biological environment that are upending conventional wisdom regarding human lifestyle, industrial production, and governmental policies. The corporate environment, the effectiveness of government services, and mass advancement or reversal effects in some nations are also significantly impacted emerging technologies. A scholar asserted that, connections between humans and machines are accelerating dramatically in the emerging technology era. More data is being gathered and used than ever before⁵¹. Automation of all trades, mobile computing, machine learning, and artificial intelligence have become necessities of the day. The majority of people believe that these changes are uncommon. Similar and simpler procedures, such the use of robots and RFID technology in some university libraries, can be found in libraries. On demand, users can borrow books, and users can download bibliographic record data from the storage. This type of application, which is more modern for libraries, is recognized as the industry's top technology. Such advanced technology is considered to be a part of more recent industrial revolutions. More so, industry 4.0 technology may be incorporated into libraries to help users with everyday chores⁵⁰.

Industry 4.0, that brought about emerging technology is the beginning of a new revolution characterised by a merger of cutting-edge manufacturing techniques and intelligent systems that interact with Organisations and people, as mentioned in the literature.¹¹². The emerging technology has frequently been referred to as a new industrial stage where a number of developing technologies are combining to offer digital solutions. In order to collect and evaluate data in real time, emerging technology uses digital

technology¹¹². One of the main issues in this new industrial stage is the emerging technology concept's extraordinarily complex technology architecture⁴². Because of this, emerging technology implementation is still being worked on³⁹. The emerging technology is supported by a wealth of recently created, cutting-edge technologies that any business or profession can adopt and use to boost production or service delivery. Additionally, in 2022, the emerging technology era is characterized by technologies including 3D printing, sensor technology, artificial intelligence, robots, drones, and nanotechnology^{21 112}. On the other hand, Deloitte asserts that many of these technologies are not novel and were developed 20 or 30 years ago. However, the author explains that recent huge increases in processing power, cost reductions, and shrinking. When discussing the various technologies connected to the emerging technology, the list contains the following: Cyber-Physical System (CPS), Internet of Things (IoT), Internet of Services (IoS), Big Data and Analytics, Augmented Reality, Autonomous Robots, Additive Manufacturing (3D Printing), Cloud Computing (CM), and Simulation. These technologies have been shown to be actively contributing to the emerging technology era, providing equal chance for many enterprises to benefit from and increase output¹⁰.

The cloud computing technology is one of the emerging technologies that is particularly beneficial for partnerships and collaboration among university libraries. The "cloud computing" technology uses the Internet and centralized remote servers to maintain data, software, and applications. In other words, it is a computing model where elastic and scalable IT-enabled skills are made available to external clients as a service over the Internet. With several opportunities to combine their services with clouds, it was designed as a godsend for libraries⁷¹. Cloud computing makes a shared pool of resources, such as networks,

computer processing power, customized user and business applications, and data storage space, available. It attracts and is used by several companies and institutions, like Google, Yahoo, Microsoft, and Amazon, among others, for infrastructure solutions. Libraries are not excluded. Cloud computing makes use of a variety of technologies, including utility computing, grid computing, unified computing, web 2.0, service-oriented architecture, and others ⁹⁸. A network that is housed in the cloud is referred to as cloud computing. Instead of having resources and services on local servers, nodes, or individual devices, it is a sort of computing technology that makes it simpler to share them across the internet. Many libraries around the world are embracing and leveraging cloud computing technology to build partnerships that can lead to collaboration and give a shared pool of resources because it can do so.

The Scientific claims that libraries and librarians can share scattered resources and services that are owned by numerous businesses or regions through the use of cloud computing ⁷⁹. As participating libraries store their resources in the cloud and share passwords with other participants, cloud computing technology has emerged as a practical tool for partnerships and collaboration among libraries because it can offer a sizable pool of resources without the restrictions of physical storage. In order to make fresh resources and cutting-edge services available to their customers, libraries today are utilizing cloud computing technologies to grant access to resources and services that they do not own. Based on research, the cloud computing platform makes it easier for libraries to find and share scholarly content ¹⁰⁷. It serves as a collaborative platform that empowers libraries to enable dynamic searching as well as single point search interfaces, maximizes the use of all e-resources, and performs customized searches across a set of sources to cut down on noise and highlight pertinent content and tools to support the entire research lifecycle. Cloud computing

technology is quickly developing into a collaborative platform for users and researchers to find and access millions of journal articles, patents, and e-books, as well as for the users to tag as well as share and discuss these contents with their peers.

Some of the Organisation that provides cloud computing application and their application that are useful for partnership and collaboration in libraries are OCLC's Webscale which is perfectly using cloud computing for libraries and set an example for others. OCLC has been functioning as a cloud computing vendor because they provide cataloguing tools over the Internet and allow member institutions to draw on their centralized data store ⁵⁶. OCLC has implemented the plan of library management systems i.e. worldshare management services (WMS). This service has many areas like acquisitions, analytics, and resource sharing, cataloguing and license management components. It offers the entire library collection management in a cloud based application. The main purposes of webscale are that libraries can share their resources, data, and innovation with ease.

Ex-Libris Cloud a well-known American provider of library software. To automate library operations, it offers cloud-based solutions. Most of its products were created for locally implemented solutions, and only subsequently were they modified for hosting environments. According to their website, Ex-Libris technologies are being used by more than 5300 libraries in more than 80 countries to automate their library resources. It enables libraries to increase their productivity, cut operating expenses, and increase value by introducing new services. Through its Alma library-based system, it has altered the manner that traditional library resource management is provided. In addition to providing significant cost savings overall, using a centralized cloud service and implementing

software allows libraries to easily influence the community's cooperative efforts to deliver efficient services for their users ⁷⁴.

Duraspace's DuraCloud provides open source repository solutions by undertaking turnkey projects for Organisations and libraries to enable them to share scholarly literature using DSpace and Fedora Commons. It is particularly devoted to improve and sustain Fedora and DSpace. These open source repository solutions are very famous for IR solutions. Its new service Dura Cloud provides digital preservation support services in the cloud, which is cost effective and simple for libraries. Dura Cloud helps libraries to move content to the cloud and store it with different service providers to eliminate the risk of data loss. The cloud solutions offered include online backup, preservation and archives, media access, online sharing, and cloud broker.

OSS Labs from India is using Amazon's elastic cloud computing platform owing to the various capabilities of Amazon such as high durability of data, ISO standards based strong information security and flexibility. It is expected that the OSS labs will be able to provide robust open based solutions to demanding customers ⁴⁹. OSS Labs offer hosting and maintenance services for Koha ILS and DSpace IR. OSS Labs use Amazon's cloud services. Library operations have become very cost effective and the library staff needs not to worry about maintenance of software etc.

In the era of emerging technology, there is a greater need for trained employees, competent, creative, and technologically savvy librarians are essential¹¹³. The emerging technology will lead to new types of universities that will approach teaching, research, and service differently¹¹⁵. Additionally, a researcher predicted the future of higher education, which will be characterized by interdisciplinary and virtualized professors, labs, libraries,

and classrooms¹¹⁵. This suggests that librarians should improve their abilities in order to adapt to the evolving workplace. These abilities include using information and communication technology, as well as communication, marketing, public relations, and other talents. The future skill requirements for librarians should be anticipated by libraries so that adequate training programs can be developed for them and job descriptions may be updated to reflect these changes.

2.3.5 Data Literacy Skills and Emerging Technologies

At this point, developing digital literacy is extremely important to supply the necessary digital information resources. Digital literacy includes skills like using visual aids, combining numerous digital texts, navigating non-linear digital texts, and analyzing digital data. Print and electronic resources, as well as primary (first-hand information) and secondary (second-hand information or synthesis of primary materials), as well as a variety of multimedia formats, are all available in libraries. Academic library staff members must take the initiative to ensure that services are delivered successfully and must be aware of how effectively consumers are utilizing the services. The majority of libraries now use technology, and consumers have begun to demand and use electronic-based services, because using electronic services can save time and is simple. Digital literacy abilities are necessary for working in a digital environment and effectively offering e-resource services to users in any type of electronic library. Computer basics, social media, integrated library management systems, information retrieval, networking, programming, web page design, database management system, metadata, editing the data to multimedia documents, and strong technical skills with communication and critical thinking abilities are all part of the digital library literacy set.

To use and offer any traditional services with a digital component, certain abilities are necessary. Understanding information and carrying out activities digitally in a digital environment are key to digital literacy. These are all the abilities and information need to function in the digital world, including: Using a computer to find, manipulate, and communicate information; Being able to identify information in different types of formats and media (such as films, databases, the internet and so on); To critically evaluate information and media sources for accuracy, reliability and credibility; Using digital tools and information ethically and safely¹²⁰.

When it comes to enhancing their overall job performance and being able to meet the needs of their clients, these abilities are of utmost importance to librarians. Additionally, these abilities make librarians useful. The librarian's capacity to meet the requirements of their consumers in this digital age will determine how relevant they are. Without the crucial digital literacy abilities, the library's relevance won't be recognized, which will also hurt the profession's visibility. These abilities also contribute to time-saving when using information resources. Saving the user's time will always be one of the most important components of the industry because time is money. The search for and use of information will be difficult and discouraging for the user without the development of digital literacy skills. The use of information resources increases as a result of having strong data literacy skills. Once users have mastered digital literacy, they will constantly desire to access these resources, which will result in increasing utilization of the resources to satisfy informational demands¹²¹.

The term "data literacy" was first used in 1997 by Paul Glisser to refer to a person's ability to understand and make use of information obtained via computers in a range of formats and sources ²². Data literacy is the capacity to use a wide range of information

technology tools for information search, navigation, evaluation, and processing. In order to meet their various information needs, people must be able to recognize, use, manipulate, and convert digital information from digital resources. Data literacy is a combination of both digital and literacy, but it goes much beyond this combination because it encompasses all of the technical knowledge, abilities, and skills needed to use digital technology effectively.

A scholar proposed a framework for all aspects of digital literacy, focusing on three main intersecting dimensions: "technical," "cognitive," and "social-emotional"⁶³. The technical dimension is associated with technical and operational skills such as the use of peripheral devices, file protection, troubleshooting, application searching and installation, and data transfer. The cognitive dimension is concerned with the ability to think critically when searching for and evaluating digital information, choosing appropriate software for specific tasks, and developing products that best demonstrate new understanding. The social-emotional dimension is concerned with using the Internet appropriately for the purposes of socialising, communicating, and learning, as well as protecting the individual's safety and privacy.

Literacy is the capacity to read for information, write clearly, and analyze written material¹²². Digital information is a symbolic representation of data. A collection of digital practices, identities, and behaviors are explained by a mix of fundamental data and literacy skills. As information technology advance, so does data literacy, which means that in order for librarians to use digital technologies to their full potential, they must stay current on these skills. Another way to look at digital literacy is as a set of academic and professional practices developed in response to developments in contemporary technology¹²³. A set of

abilities known as digital literacy is necessary for effective participation in a society that values knowledge. These abilities are crucial for ensuring proper information exchange, cooperation, and use of digital technology including tablets, smart phones, laptops, and PCs. It is opined that a person who is digitally literate should be familiar with using computers, be able to analyze information to ensure accurate judgment, be able to participate in online meetings and social media while adhering to engagement protocol, and be able to search for and disseminate information¹²⁴. For both the general public and those who work in or teach in our society, digital literacy is crucial¹²⁵.

University libraries squander young people's potential in the sea of initiatives to improve society by teaching digital literacy. It greatly accelerates the spread of digital literacy education outside the confines of libraries. Students' cognitive capacities outside of the classroom were expanded by a digitally embedded education system, which also promoted digital citizenship¹²⁶. To ensure that their consumers receive better services, librarians must be properly prepared with these abilities. These abilities include sharing resources, web surfing, social networking, instant messaging, and a variety of other digital-focused activities¹²⁷. They also require knowledge of information, media, technology, and innovation. These abilities will be beneficial for both their career and lifelong study. The capacity to navigate a website, search for a page or file, export citations, create social media accounts, and upload information online are some more talents librarians must possess. By having these, they may increase their knowledge and give their users the information they need when they need it³.

In this modern era of science and technology, librarians and library users alike need to be cognizant of digital literacy. In this digital age, library patrons are more interested in using digital resources to further their research¹²⁸. In order to effectively use the digital

information sources that libraries offer, it is crucial for libraries to train their users in digital literacy. To ensure the efficient use of digital resources, information retrieval abilities, evaluation skills, and resource management are crucial. These abilities aid in making research-oriented librarians more visible so they can reach a larger audience. The library's services will be enhanced through the utilization of digital resources, and this will also result in the acquisition of new technology that may be used to enhance user experiences. Abertawe³ went on to say that a person with digital literacy abilities will be confident in navigating an information-overloaded world and will be able to acquire crucial lifelong learning skills. They will be able to benefit from those talents in every learning scenario. Libraries must therefore continue to provide their patrons with access to digital literacy-related technology. By possessing these abilities, digital literacy empowers library personnel, enhancing their overall job performance and ability to provide better services.

With the recent technology explosion, librarians must be tech knowledgeable to give tech-related services to their teeming clientele in keeping with the profession's objectives. Given the current advancements in technology and the gradual digitalization of the information landscape, the value of digital literacy for librarians cannot be overstated. Without the skills necessary to assure adequate accessibility, appraisal, preservation, and retrieval of material, thriving in this digital library environment is akin to being a librarian without any value¹²⁹. The difficulties people have when learning digital literacy skills have been categorized and linked to both material and human aspects. Other problems that hamper digital literacy in Africa include donor funding, weak network power, inadequate digital facilities, and low utilization of the available facilities, poor ICT training, and a lack of staff. Insufficient finance, a lack of qualified staff, low talent retention, a lack of internet

access, a lack of standard telecommunications infrastructure, and copyright issues are all mentioned by Chiware¹³⁰. In his opinion, the administration of libraries has a role to play in ensuring that its staff is taught these digital literacy skills, in providing funds for the acquisition of these digital technologies, in sponsoring courses for its staff to take in relation to digital literacy, and in providing them with the necessary support. It was moreover noted that the lack of enthusiasm among librarians as another issue preventing the development of digital literacy abilities¹³¹. Some librarians don't value professional growth, therefore they wait for their employers to train them rather than enrolling in classes and workshops that will improve their digital literacy abilities. Additionally, they cited the lack of effective information technology regulations governing the implementation of digital initiatives in libraries as a problem affecting librarians' acquisition of digital literacy abilities. The establishment of these digital institutions was hampered by the unsuccessful implementation of the national information technology policy. Without these digital institutions, it may not be possible to acquire digital literacy skills, and even if it is, there won't be the necessary facilities for librarians to practice these skills.

The essential skills of library science workers were surveyed by some researcher. The majority of them noted in their study's findings that web design and other web-based online activities, familiarity with digital library software, and familiarity with repository software are among the IT capabilities. Their study emphasises the need for developing IT abilities, which are crucial¹³². The findings of a study showed, there are 55 competences that librarians must possess¹³³. According to this survey, the knowledge of computer technology, operating systems, integrated library management systems, fundamental computer operations, and the use of Word, Excel, and PowerPoint make up the majority of their gained skills.

There are several sophisticated skills that are lacking, including knowledge of desktop publishing, building and maintaining websites for libraries, providing recent modern library services, and managing and evaluating information services. According to authors, the LIS curriculum needs to be revised in light of the newest services and technologies.

Academic Nigerian university libraries' professional ICT competencies were confirmed by a research study¹³⁴. According to the survey, Nigerian libraries lack ICT infrastructure, internet access, ICT policies are not being implemented, there are power outages, and library staff members have the lowest ICT skills and competences. Hard skills, soft skills, leadership skills, skills for the twenty-first century, civic skills, research skills, learning skills, survival skills, trans-literacy skills, and cultural intelligence are among the top 10 blended talents¹³⁵. He provided a detailed description of the future duties and responsibilities of librarians in this study, including those of a digital and data librarian, embedded librarian, multi-literacy instructor, license negotiator, knowledge manager, and many more. The workplace information literacy abilities of Pakistani library workers were reported¹¹⁰. Their research reveals that while library professionals are good at the fundamental operational levels of library skills, such as searching strategies, providing users with information, marketing, and administrative skills, they fall short in other areas, including knowledge of copyrights and research-supporting software like plagiarism detection and reference management tools. In Pakistan, a researcher spoke with 15 academic librarians. They talked about the difficulties in library leadership in their study¹³⁶.

According to the study's findings, senior library professionals frequently struggle with poor communication skills, a lack of funding for subscriptions to journals and magazines, and a lack of professional development abilities. As a result, library academics were

advised to adopt new curricula and offer refresher courses through a variety of channels, including MOOCs, library association workshops, and library faculty development programs. Because the majority of them did not finish formal librarianship courses, they were also technically lacking. In their interviews, library workers place a strong focus on self-learning. Lack of funds for professional skill development, a lack of ICT and physical facilities, a lack of time and internet access, insufficient ICT educators, and the taught LIS course curriculum are all obstacles to learning digital literacy. University librarians in African English-speaking nations were evaluated by researchers¹³⁷. Their study report reveals that the majority of them possess moderate levels of digital literacy skills, including those related to creating metadata, digitizing objects, creating digital libraries, and creating library websites.

Researchers from university libraries in Jordan conducted research with relation to the impact of librarians' digital technology and expertise in survey study. There are 203 participants in their study. In their research, they discovered that while basic digital skills—such as sending and receiving mail, downloading and uploading documents, conducting database searches, and information retrieval—acquired more, advanced IT skills—such as creating databases and developing library websites—were perceived to have a moderate level of proficiency. They had a number of difficulties learning new digital skills, such as not receiving additional funding for the workshop training and not having enough time or money¹³⁸. Moreover, these resources span both the electronic facilities that can be utilized to access them and the electronic information resources themselves¹³⁹. This study differs from the previously mentioned one in that it also showed that some African libraries have no e-resources at all. This finding is consistent with another study finding, where it

was found that baseline digital abilities for librarians included knowledge of Word, Excel, and PowerPoint as well as fundamental computer operations¹⁴⁰. For efficient service delivery, individuals must possess these fundamental skills, which include turning on a computer and producing, accessing, storing, and retrieving information.

The findings are also related to those of another researcher who evaluated the digital literacy of university librarians in African English-speaking nations, finding that most of them have moderate levels of proficiency in areas like metadata development, digitization, the creation of digital libraries, and the creation of library websites⁸. The study differs from the ones previously stated in that it also found that online communication skills, such as those for email, phone calls, instant messages, and SMS, are crucial for the efficient use of digital technology. Librarians may not be able to assist their teeming users without these fundamental skills. Another reason why librarians in Africa, particularly Nigeria, are now gaining these fundamental digital literacy skills is the new trend in university libraries in Nigeria to request electronic materials to develop their resources²⁴.

In their investigation of digital literacy abilities, two researchers found that Nigerian librarians lack a good understanding of computer networking, software coding and system security protection, digital content protection, and the development of various file formats¹⁴¹. The findings corroborate those of another researcher, who found that academic librarians lacked a wide range of advanced digital literacy skills, including coding, developing library websites, using the cloud, handling large data, and designing databases¹⁴². These cutting-edge skills must be mastered by African librarians in order to ensure efficient management and use of digital technologies. These African librarians considered web languages like JavaScript, Java, HTML, and coding abilities to be advanced talents and

not very vital in carrying out their duties, in addition to having understanding of big data. This is consistent with the findings of two Nigerian authors, who found that librarians were either unfamiliar with or had minimal expertise of database management, coding, and web development applications¹⁴³. More so, another researcher also found that librarians lacked confidence in more sophisticated digital literacy abilities like software development and website creation¹⁴⁴.

The problem with the library's inadequate ICT infrastructure came next, which would have increased the urge to learn the necessary digital literacy skills for daily tasks. This finding supports a research findings that poor funding, a lack of ICT and physical facilities, a lack of time and internet access, a shortage of ICT educators, and a lackluster LIS curriculum are among the difficulties librarians have while trying to learn digital skills¹⁴⁵. This result is consistent with that of another researcher, who found that a number of obstacles, including inadequate budget and a lack of training sponsorship, prevent librarians from acquiring digital literacy skills¹⁴⁶. This outcome is consistent with two researchers, who found that a lack of updated courses, a poor LIS curriculum covering digital literacy abilities, and a general lack of workshops and professional training are important obstacles to acquiring digital literacy skills¹⁴. Another scholar, discovered in a 2017 study that academic librarians were comfortable using and integrating technology with their pupils¹⁴⁷. However, the same study found that only 35% of respondents said they were either fully or substantially involved in advocating for technology use in their academic. Only 61% of respondents had full or substantial involvement in information dissemination about the use of technology in the academic, 53% were disseminating information about technological advancements.

Although the level of confidence is comforting, it is regrettable that academics do not use academic librarians as technology resources as they are willing and able to play a significant and fundamental role in the integration of technology into the curriculum. It is challenging for academic librarians to work effectively with teachers in an endeavor to integrate IT more fully into the curriculum for the benefit of student learning since academic librarians are not included in the usage of technology in academics. Tertiary education should put more emphasis on the academic librarian's position as a leader in this area. Less than 30% of respondents to a survey conducted by researcher, of 149 academic librarians who graduated from an academic in the southeast of the United States over a five-year period reported having served on media and technology advisory boards or committees, which would be a key sign of a technology leader given how important these boards are to the current educational practices¹⁴⁸.

These results would seem to highlight the significance of creating leadership curricula and training for aspiring academic librarians as well as the necessity of maintaining academic librarians as an essential and integral element of their academics and districts. Academic librarians are prepared for best practices in their academics by the faculty who train them to use and integrate IT in the classroom¹⁴⁹. IT must be in line with the curriculum if it is to improve it; it cannot be tacked on or utilized as an afterthought¹⁵⁰. A whole chapter in AASL's Empowering Learners is devoted to the necessity of academic librarian leadership in technology, teaching, and learning

2.4 Conceptual Model

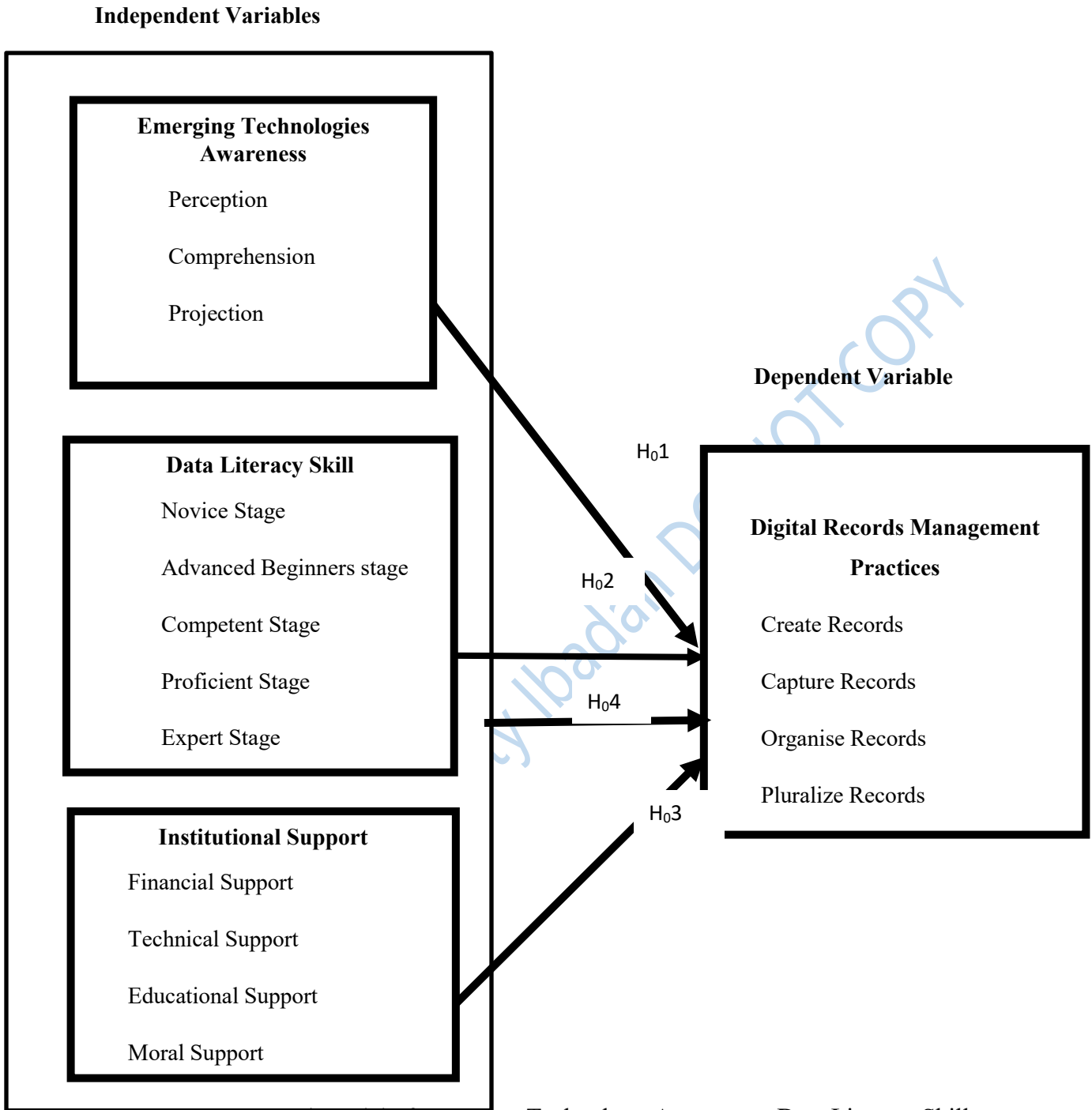


Figure 2.5: Conceptual Model of Emerging Technology Awareness, Data Literacy Skills, Institutional Support and Digital Records' Management Practices

Source: Researcher's Compilation, 2023

The conceptual model is the diagrammatic representation of the influence of the independent variables on the dependent variable. As shown in the model, digital records management practices might be influenced by any one or combination of the three

independent variables which are emerging technology awareness, data literacy skills and institutional support. Emerging technology awareness is measured by metrics adapted from Model of SA in Dynamic Decision, data literacy skills measured by metrics adapted from Drefus Theory of Skill acquisition, while the institutional support is measured by metrics adapted from Ververde and Rodriguez model of institutional support¹⁵¹.

The influence of the independent variables on the dependent variable of study as considered by the researcher is based on empirical and conceptual literature review that was available as at the period of the study. The independent variables of the study are emerging technologies awareness, data literacy skills and institutional support while the dependent variable is records management practices among librarians in universities, South-West Nigeria. The conceptual model suggests that there is influence of the independent variables on the dependent variable. The conceptual model identifies and describe the influence that exist between emerging technologies awareness and data literacy skills of librarians in universities. It also shows a nexus between emerging technologies awareness and institutional support.

There are four hypotheses to be measured based on the conceptual model. In the context of this study, awareness is achieved when librarians are able to perceive, comprehend and project the benefits of emerging technology. Therefore, the awareness of librarians about the emerging technology is expected to influence their digital records management practices. In the same vein, because the stages of skill acquisition vary, those in the novice stage of data literacy skills have the least skills available to influence the digital records management practices of librarians of universities in southwest Nigeria while it is expected that those in the advanced beginners' stage will demonstrate better competence

than those at the novice stage. In the same vein, a librarians at the competent stage, the proficient stage then the expert stage are expected to be effective in records management practice according to their skill levels which is expected to have influence on the digital record management practices. In essence, the ability or effectiveness of librarians in digital records management practices such as creation of records, capture, organise and pluralization of records will be determined by whether they are novice, beginner, competent, proficient or expert in the context of data literacy skills.

Furthermore, the model shows that digital records management practices of librarians can be influenced by the extent of the institutional support available to them. According to the metrics provided in the model, digital records management practices can be influenced by the level of financial support, technical support, and educational/moral support available to librarians. In addition, the model also indicates that the combination of all these variables can have joint influence on the creation, capture, organization and pluralization of digital records of librarians of the universities in Southwest Nigeria.

2.5 Summary of the Literature Reviewed

The literature review focuses on the study's core ideas. In light of scholars' understanding, key elements of awareness of emerging technologies, data literacy skills and institutional support were highlighted as they relate to or have an impact on records management practices. Researchers discovered that the association between data literacy skills and emerging technology awareness had a substantial impact on records management practices with regard to university library management. Academics concur that knowing about emerging technology was helpful to librarians in many ways, but non-knowledge and misuse had a negative impact on the growth and usefulness of the library to its academics. The

academics whose works were reviewed also concurred that records management techniques can face a number of difficulties in the current digital era due to a lack of data literacy abilities. As a result, librarians may find it difficult to distribute records in the appropriate digital formats if they lack data literacy skills. They might not be familiar with software and tools for managing records, which could lead to inconsistent or missing records. This may make it more difficult to accurately record and depict library activity and transactions. In order to make retrieval easier, digital records must be properly organised and metadata-tagged. Without data literacy abilities, librarians could find it difficult to organise documents efficiently, which would result in subpar categorisation and ineffective search capabilities. This may impede quick access to pertinent records, impairing operational effectiveness and decision-making procedures.

The emerging technology refers to the ongoing automation, data exchange, and technological advancements in various industries. In the context of librarianship, this revolution has significant implications. Librarians need to be aware of emerging technologies such as artificial intelligence (AI), machine learning, blockchain, and the Internet of Things (IoT) as they impact information access, organization, and retrieval. Research has shown that librarians' awareness of these technologies varies widely, with some embracing these changes while others struggle to keep up. Training programs, workshops, and conferences have been recommended to enhance librarians' technology awareness and readiness for the digital age.

Digital records management is crucial for preserving and providing access to digital information in libraries. With the proliferation of digital resources, librarians need to be well-versed in digital preservation strategies, metadata standards, and long-term access

solutions. Research points out challenges such as the rapid obsolescence of digital formats and the need for robust preservation infrastructure. Librarians must also address issues related to copyright, privacy, and authenticity in digital records. Collaboration with archivists, digitization experts, and information technologists is recommended to develop effective digital records management practices.

Additionally, digital records need to be protected with security measures to prevent unauthorized access to important data. Librarians who lack data literacy abilities may not be aware of fundamental security procedures like using secure passwords, identifying phishing efforts, or putting in place suitable access limits. This puts the integrity and security of records at risk by causing data breaches, unauthorized information disclosures, or record loss. Additionally, successful use of records management software and applications requires data literacy abilities. Without these abilities, librarians can find it difficult to use the features of electronic document and records management systems (EDRMS) or other digital platforms to their full potential. This may restrict the university library's capacity to establish effective workflows, automate procedures, and utilize cutting-edge records management technologies. For productive internal cooperation and record sharing, digital literacy skills are crucial. Without these abilities, librarians could find it difficult to use collaborative technologies, securely transmit papers, or participate in knowledge management projects. This may hamper the Organisation's ability to use its pooled expertise and inhibit good teamwork and information exchange.

Despite the fact that some academics appear to disagree, institutional support is vital for improving records management practices within firms. Establishing clear standards and guidelines for records management with institutional support is possible. However, other

academics contend that Organisational expectations for record generation, classification, retention, disposal, and preservation are outlined by policies. Employee understanding of roles and responsibilities is improved by clear policies, which also ensure consistency and adherence to records management standards. According to certain published works, university library administration must offer the tools required for efficient records management. This includes providing funds for technology, records management systems, and training procedures. Employees who have access to electronic document and records management systems (EDRMS), storage infrastructure, and training materials are better able to manage records in an effective manner. Encouraged library stakeholders to include training and education practices to improve library staff members' knowledge and abilities in records management. Regular training sessions and seminars should also guarantee that staff members stay up to date with changes in technology or regulations as well as best practices.

Institutional support is essential for improving records management procedures, according to other literature. It offers the foundation, tools, instruction, and direction required to guarantee that records are properly managed throughout their existence. The university's library may enhance the quality, usability, security, and compliance of their records with strong institutional support, resulting in better decision-making, operational efficiency, and reduced risk. However, there is no study that examines the awareness of emerging technologies, data literacy abilities, institutional support, and record-keeping procedures at South-West universities in Nigeria. Therefore, the study's goal is to close the existing gap.

Institutions need to provide support to librarians as they navigate the challenges posed by the Emerging Technology. This includes offering continuous professional development opportunities, allocating resources for technology adoption, and fostering a culture of innovation within libraries. Studies emphasize the importance of leadership that recognizes the evolving role of libraries in the digital age and encourages librarians to embrace new technologies. Collaborations with IT departments, partnerships with industry experts, and integration of technology-related competencies into job descriptions are strategies that institutions can adopt to provide comprehensive support.

Data literacy is the ability to understand, analyze, and interpret data effectively. In the 4th Industrial Revolution era, librarians are expected to possess data literacy skills to assist patrons in finding, evaluating, and using data-driven information. Literature highlights the need for librarians to be competent in data analysis tools, statistical methods, and data visualization techniques. Librarians should also be able to guide users in ethical data use and privacy considerations. Training programs and collaborations between librarians and data specialists have been suggested to improve data literacy among library professionals.

Endnotes

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Chapter Three

Methodology

This chapter is a brief description of the procedures involved in carrying out the study on emerging technology awareness, Data literacy skills, Institutional Support and Records Management Practices among Librarians in Universities, South west Nigeria.

3.1 Research Design

The descriptive survey research design was used as the researcher collected the two forms of data (quantitative and qualitative) around the same time and then integrated the information in the interpretation of the overall result. The quantitative aspect of the study entails the use of structured instrument to collect data from a wide range of respondents. This was supplemented with the qualitative aspect in which interview was conducted with selected experts (University Librarians).

The study adopted mixed method research approach; the research approach enables the researcher to converge or merge quantitative and qualitative data in other to provide a comprehensive analysis of research problem.

3.2 Population of the Study

The population for this study consists of all the three hundred and seventy-eight librarians (378) from all the fifty three university libraries in South west, Nigeria excluding newly established universities within the last one year because they could not give us what we really wanted.

Table 3.1: Showing the University libraries and number of librarians in southwest Nigeria

S/N	Name and Location of Universities	Ownership of the Universities	Number of Librarians.
1	Federal University of Agriculture, Abeokuta, Ogun State	Federal	24
2	Federal University of Medical and health Sciences, Ilaorogun, Osun State	Federal	6
3	Federal University of Technology, Akure, Ondo State	Federal	15
4	Federal University, Oye-Ekiti, Ekiti State	Federal	9
5	Obafemi Awolowo University, Ile-ife, Osun State	Federal	18
6	University of Ibadan, Oyo State	Federal	19
7	University of Lagos, Yaba, Lagos State.	Federal	18
8	Achievers University, Owo, Ondo State	Private	3
9	Adeleke University, Ede, Osun State	Private	8
10	Afe Babalola University, Ado-Ekiti - Ekiti State	Private	9
11	Atiba University, Oyo Town, Oyo State	Private	1
12	Ajayi Crowther University, Oyo, Oyo State	Private	9
13	Aletheia University, Ago-Iwoye, Ogun State	Private	2
14	Anchor University Ayobo, Lagos State	Private	2
15	Babcock University, Ilishan Remo, Ogun State	Private	12
16	Bells University of Technology, Otta, Ogun State	Private	4
17	Bowen University, Iwo, Osun State	Private	10
18	Caleb University, Imota, Lagos State	Private	4
19	Chrisland University, Ogun State	Private	2
20	Covenant University Otta, Ogun State	Private	10
21	Crawford University Igbesa, Ogun State	Private	5
22	Crescent University, Abeokuta, Ogun State	Private	5
23	Dominion University, Ibadan, Oyo State	Private	3
24	Eko University of Medical Sciences, Lagos State	Private	4
25	Elizade University, Ilara-Mokin, Ondo State	Private	6
26	Fountain Unveristy, Oshogbo, Osun State	Private	8
27	Hallmark University, Ijebu Itele, Osun State	Private	4
28	Joseph Ayo Babalola University, Ikeji-Arakeji, Osun State	Private	4
29	Kings University, Ode Omu, Osun State	Private	3
30	Kola Daisi University, Ibadan, Oyo State	Private	3
31	Lead City University, Ibadan, Oyo Sate	Private	10
32	Mcperson University, Seriki Sotayo, Ajebo, Ogun State	Private	3
33	Mercy Medical University, Iwo, Osun State	Private	1
34	Mountain Top University, Ogun State	Private	3
35	Precious Cornerstone University, Oyo State	Private	2
36	Redeemer's University, Ede, Osun State	Private	8
37	Trinity University, Yaba, Lagos State	Private	2

38	Venite University, Iloro-Ekiti, Ekiti State	Private	2
39	Wesley University Ondo, Ondo State	Private	5
40	Adekunle Ajasin University. Ondo State	State	10
41	Ekiti State University. Ekiti State	State	15
42	Ladoke Akintola University of Technology, Ogbomosho. Oyo State	State	13
43	Lagos State University, Ojo. Lagos State	State	23
44	Olabisi Onabanjo University, Ago Iwoye. Ogun State	State	13
45	Ondo State University of Medical Sciences, Ondo State	State	4
46	Ondo State University of Science and Technology, Okitipupa. Ondo State	State	4
47	Osun State University Osogbo, Osun State	State	13
48	Oyo State Technical University Ibadan. Oyo State	State	3
49	Tai Solarin University of Education Ijebu Ode, Ogun State	State	6
Total			378

Sources^{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49}

3.3 Sample and Sampling Technique

Total enumeration, also known as a census was adopted, it is a sampling technique where the entire population or group under study is included in the research or analysis. In other words, instead of selecting a subset or sample from the population, the researcher collects data from every individual or element within the entire population. Total enumeration is often used when the population size is small, manageable, or feasible to study in its entirety, or when accuracy and completeness of information are crucial and time and resources permit. For this study total enumeration was used. This means that all the three hundred and seventy-eight (378) librarians were used for the study.

3.4 Description of Research Instruments

The instruments for this research work were structured questionnaire and interview guide. The interview guide was adopted to facilitate the triangulation of the research data. The interview data was compared with the quantitative data to detect divergence and context.

Questionnaire on emerging technology awareness, Data literacy Skills, Institutional Support and Records Management Practices among librarians in universities, south-west was adapted from previous studies^{50,51,52}. Also, the study adopted the Likert scale design which allows the researcher to list options for respondents to choose from. The instrument is divided into five (5) sections.

Section A contains the demographic information of respondents which is self-developed. The bio-data of the respondents was measured with name of institution, gender, designation, age, years of work experience and section. The section contained six(6) questions.

Section B is about the digital records management practices of the librarians starting with records creation, capture, organization and pluralization. This section makes use of likert scale, strongly agree (SA), agree(A), disagree (D)and strongly disagree (SD). The section contained twenty (20) statements.

Section C is on the emerging technology awareness which is divided according to the three sub-metrics which are perception, comprehension and projection. This section makes use of likert scale, strongly agree (SA), agree(A), disagree (D)and strongly disagree (SD). The section contained fifteen (15) statements.

Section D is on data literacy skills of librarians, the section is subdivided according to the submetrics and stages in acquiring skills which are the novice stage, advanced beginners' stage, competent stage, proficient stage and the expert stage. This section makes use of likert scale, strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). The section contained twenty-five (25) statements.

Section E is about the institutional support given to university libraries by parent institution. The section is subdivided according technical support, financial support, educational support, moral support. This section makes use of likert scale, strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). The section contained twelve(12) statements

3.5 Validity of Research Instruments

Validity of research instrument is the ability of the instrument to measure what it is supposed to measure. The instrument was also being subjected to both face and content check for validity by the supervisor and other experts in the field of Library and Information Science for proper vetting and the corrections, suggestion and opinions were incorporated into the final copy of the instrument before administration.

3.6 Reliability of the Instrument

The reliability of the instrument was tested through a pilot study using thirty (30) librarians in Alhikma University, Kwara State University and University of Ilorin, ten (10) librarians from each university. All comprises of private, state owned and federal government owned university and they are not part of the study geographic location. Twenty-five (25) copies of questionnaire were retrieved and analysed for the reliability test. The reliability test was done using Cronbach's Alpha to determine the reliability of the scale in the questionnaire. The result is presented in Table 3.2

Table 3.2: Reliability Score of the Research Instrument

SN	SCALE	Cronbach Alpha	Remark
1	Digital Records Management	.859	Highly Reliable

	Scale		
2	Awareness of Emerging Technology scale	.808	Highly Reliable
3	Data Literacy Skills Scale	.966	Highly Reliable
4	Institutional Support Scale	.809	Highly Reliable
5	Combined Scale	.924	Highly Reliable

Source: Field work, 2024

For the qualitative aspect of the reliability test, The validity is linked to the genuineness of the research, it focuses on whether the right research questions were formulated, the adopted method is appropriate and the research data is genuine and can hold up to critical scrutiny. To ensure all these parameters were put in place, the interview guide was shown to the supervisor and other experts in the field for scrutiny.

3.7 Method of Data Collection

The questionnaire was administered with the assistance of 4 research assistants who were trained by the researcher, also, interview was conducted for the university librarians. The whole data collection exercise from all the institutions under study were covered within the period of six weeks.

3.8 Methods of Data Analysis

The data collected from questionnaire was statistically analyzed using the IBM SPSS Statistics Software. The research questions were analyzed with descriptive statistics such as simple frequencies and percentages. The mathematical representation of the dependent variable is Y while X represent the independent variables. Thus, hypotheses 2, 3, 4 was

analyzed using linear regression analysis and hypotheses 1 was analyzed using multiple regression analysis. All hypotheses were tested at 0.05 level of significance.

Endnotes

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Chapter Five

Conclusion

This chapter concludes the study on the influence of emerging technology awareness, data literacy skills and institutional support on digital records management of librarians in university libraries, South-west Nigeria. This chapter outline the summary of findings, conclusions and recommendations. The chapter also outlines the contributions of the study to existing knowledge and suggests areas for further research.

5.1 Summary of Findings

The librarians in university libraries in Southwest Nigeria generally engage in all aspects of digital record management practices. They are involved in creation, capturing, organizing, and duplicating techniques to maintain comprehensive and accessible records.

It was also found that librarians in university libraries in Southwest Nigeria have a strong overall awareness and positive outlook towards emerging technologies. They exhibit a good balance of awareness, understanding, and anticipation of the benefits that these technologies can bring to their professional lives.

In addition, the study found a moderate level of institutional support for librarians in Southwest Nigeria. However, while technical support is strong, financial and educational support are areas with potential for improvement. Moral support, in particular, needs significant attention to ensure librarians feel valued and motivated in their roles.

The test of first hypothesis revealed that emerging technologies awareness has a significant influence on digital records management practices among librarians in university libraries in Southwest Nigeria.

The analysis of the second hypothesis revealed data literacy skills of librarians has a significant influence on digital records management practices in university libraries in Southwest Nigeria.

In addition the study found that institutional support does not have a significant influence on digital records management practices among librarians in university libraries in Southwest Nigeria.

The study also found a significant combined influence of emerging technologies awareness and data literacy skills on digital records management practices among librarians in university libraries in Southwest Nigeria. However, institutional support does not significantly contribute to DRM practices when combined with the other two predictors.

5.2 Conclusion

Digital records management has become one of the essential services in university libraries, especially with the proliferation of digital information resources and increasing demand for remote, round-the-clock access to information among various stakeholders. It is therefore encouraging that majority of librarians in Southwest Nigerian have taken interest in the practice. Similarly, the awareness of emerging technologies relevant to digital records management is an encouraging sign. However, the apparent inadequate institutional support is a matter of concern. The finding that institutional support does not significantly influence digital record management practices suggests that libraries in Southwest Nigerian may not have an official policy for digital records management,

leaving space for ad-hoc practices which may not yield the best result for the libraries and their patrons.

5.3 Recommendations

Based on the findings of the study, here are seven recommendations:

1. Universities libraries in Southwest Nigeria should invest in regular and comprehensive training programs focused on digital record management practices. These programs should cover all aspects of DRM, including creation, capturing, organizing, and duplicating techniques, to ensure that librarians are proficient in maintaining comprehensive and accessible records.
2. University libraries in Southwest Nigeria should actively promote the adoption and integration of emerging technologies. This can be achieved by organizing workshops, seminars, and hands-on sessions that highlight the benefits and practical applications of these technologies in librarians' professional lives. Encouraging librarians to stay updated with technological advancements will enhance their efficiency and effectiveness.
3. Institutions should allocate more funds to support the acquisition of advanced technological tools and resources necessary for digital records management. Additionally, financial support for training and professional development should be increased to ensure librarians have access to the latest knowledge and skills in DRM practices.
4. Universities libraries in Southwest Nigeria should offer more educational opportunities, such as scholarships and sponsorships for advanced degrees and certifications related to digital records management and emerging technologies.

This will not only improve the skillset of librarians but also contribute to their professional growth and motivation.

5. Institutions need to pay greater attention to the moral support provided to librarians. This can be achieved by fostering a positive work environment, recognizing and rewarding librarians' efforts, and providing opportunities for professional growth. Ensuring that librarians feel valued and appreciated will boost their motivation and job satisfaction.
6. Given the significant influence of data literacy skills on DRM practices, institutions should prioritize enhancing these skills among librarians. This can be done through specialized training programs that focus on data analysis, information retrieval, and data management techniques. Improving data literacy will enable librarians to manage digital records more effectively.
7. Since the combined influence of emerging technologies awareness and data literacy skills is significant, university libraries in Southwest Nigeria should design integrated training programs that address both areas simultaneously. By equipping librarians with a balanced skill set in emerging technologies and data literacy, libraries can optimize their digital records management practices and ensure higher efficiency and effectiveness.

5.4 Contribution to Knowledge

This study has made significant contribution to knowledge, specifically in various aspects such as conceptual, theoretical and empirical contributions. Conceptually, the study has contributed to the understanding of various variables such as digital records management, emerging technologies awareness, data literacy and institutional support. The researcher

has designed a unique conceptual model based on sound theoretical foundations that can guide future researchers in measuring each of the concepts.

Theoretically, the study has reviewed and adapted various theories and models such as the records continuum model, situational awareness theory, institutional support model, and Dreyfus theory of skill acquisition. All of these have been adapted to fit the study objective which has added to their validation for use in both in the context of librarianship as a field of study and Nigeria as country distinct from the West where these theories and models were developed.

Empirically, the study has collected and analysed both quantitative and qualitative data from more than twenty university libraries in South-west Nigeria to provide a unique insight into digital record management practices in Nigeria and the associated factors. This data is also available for future researchers who would be able to examine, compare and analyse them to bring out new insights about digital records management and other relevant aspects of the study.

5.5 Suggestions for Further Studies

Future researchers can explore the following subjects to expand this study;

1. Librarians attitude towards digital records management in Nigerian Universities.
2. Comparative analysis of digital records management practices in public and private universities in South-west Nigeria.
3. Awareness and adoption of emerging technology for digital records management practices in public universities in South-west Nigeria.

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Appendix

Questionnaire

Lead City University, Ibadan
Faculty of Communication and Information Science
Department of Information Management.

Questionnaire on Emerging Technology Awareness, Data Literacy Skills, Institutional Support and Digital Records Management practices among librarians in Universities, South-West Nigeria

Dear Respondents,

This questionnaire is designed to collect data on emerging technology awareness, data literacy skills, institutional support and digital records management practices among librarians in universities. Your accurate response to this questionnaire will be of great importance to this study. I humbly seek your assistance in filling this questionnaire as your responses will be treated with utmost confidentiality and used only for research purposes.

Thank You.

Section A: Demographic information (Please tick appropriately):

- Name of Institution:
- Gender: Male Female
- Designation: Librarian II Librarian I Senior Librarian Principal Librarian
Deputy Librarian University Librarian
- Age: ≤ 25 26-35 36-45 46-55 56 and above
- Years of work Experience: 1-5 6-10 11-15 16-20 above 21
- Section: Acquisition Information and Communication Technology (ICT)
Serials References Circulations Cataloguing and classification Others (specify): _____

Section B: Digital Records Management Practices are the systematic and organized digital approach of creating, recording, storing, retrieving and disposing/preservation of records within a library.

Please tick () as appropriate using the scale of strongly agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

S/N	Items	SA	A	D	SD
Create					
1.	I usually write emails				

2.	I usually circulate emails to various units in the Library				
3.	I observe records management policy before creating records				
4.	I upload records on the database				
5.	I can easily identify relevant information				
Capture					
6.	I capture visual records in the library				
7.	I use software packages such as Microsoft word to capture data				
8.	I scan records to be managed digitally				
9.	I capture records from physical documents				
10.	I capture records from electronic files				
Organise					
11.	I organize materials chronologically on the computer system				
12.	I organize materials randomly on the computer system				
13.	I organize materials in the cloud				
14.	I can easily retrieve needed record				
15.	I organize materials on external storage devices				
Pluralize					
16.	I duplicate digital records in the cyber space to avoid loss				
17.	I duplicate digital records via external storage devices				
18.	I share digital record with different library personnel				
19.	I have copies of records saved in friends and colleagues' gadgets				
20.	I update records in the original and duplicate versions				

Section C: Emerging Technology Awareness is the awareness of the ongoing technological innovation for example internet of things, big data, robotics, artificial intelligence, visual reality, web 3.0.

Please tick (✓) appropriately using the scale of highly aware (HA), Aware (A), slightly aware (SA), Not aware (NA).

S/N	Perception	HA	A	SA	NA
1.	I have heard about emerging technology				
2.	I have heard about emerging technology but know nothing about it				
3.	I know I have come across emerging technologies but know just a little about them				
4.	I have come across emerging technologies and know much about them				
5.	I am familiar with some emerging technologies				
Comprehension					
6.	I know of the different types of emerging technology(s) available				
7.	I understand the use of Internet of things technology(s) available in my university				
8.	I am aware of the best emerging technology that suites my work duties				
9.	I have access to the emerging technology(s) that are available				
10.	I understand how to acquire needed skills for the use of emerging technology				
Projection					
11.	I can utilize the best emerging technology useful in my practices as a librarian				
12.	Emerging technologies will project my relevance in my practices as a librarian				
13.	Emerging technologies will give me better access to information in my practices				
14.	Emerging Technology will improve my output practices as a librarian				
15.	Emerging technology will make me align with new trends in my career				

Section D: Data Literacy Skills is the ability of record managers and librarians to read, understand, create and communicate data as information via electronic means

Please tick (✓) the extent of your agreement to the following statement using the scale of very high (VH), high (H), low (L), very low (VL)

S/N	Items	VH	H	L	VL
Novice Stage					
1.	My level of knowledge about search terms is				
2.	My getting to know about search skills for needed information is				
3.	My familiarity with forms of data available in my library is				
4.	My ability to Identify the most appropriate search tool is				
5.	My ability to distinguish between different information sources is				
Advanced Beginners' Stage					
6.	My level of search skills for needed information is				
7.	My ability to synthesize information relevant to my work is				
8.	My recognition of the best method for data/information retrieval is				
9.	My ability to define a search strategy by using appropriate keywords and concepts is				
10.	My ability to identify key points and arguments is				
Competent Stage					
11.	I can decide the search terms before engaging in information gathering with little or no supervision				
12.	I can convert data from one format or file type to another with little or no supervision				
13.	I can sort my data with little or no supervision				
14.	I can create meaningful graphical representations of data with little or no supervision				
15.	I can create meaningful tables to organize and visually present data with little or no supervision				
Proficient Stage					
16.	I can interpret graphical representations of data				
17.	I can interpret tables to organize and visually present data				
18.	I can read and download online materials				
19.	I can use wide range of retrieval tools and resources effectively				

20.	I can critically appraise my own findings and those of others				
Expert Stage					
21.	My judgement of the best method of analyzing data from different sources is				
22.	My being able to apply and work with data in ethical manner is				
23.	My being able to present information in tables, charts, bars and graphs is				
24.	My being able to identify specialist search tools appropriate to individual information needs is				
25.	My being able to access the credibility of data gathered is				

Section E: Institutional Support is the assistance, resources and infrastructure provided by an organization or institution to individuals, projects and employees within the work environment.

Please tick (✓) appropriately using the scale below:

S/N	Items	Very High Extent 4	High Extent 3	Low Extent 2	Very Low Extent 1
Technical Support					
1.	My institution provides softwares and hardwares to support records management practices in my library				
2.	My institution provides internet connectivity to aid records management practices in my library				
3.	My institution subscribes to cloud computing services to aid records management practices in my library				
Financial Support					
4.	My institution provides funds for training and retraining of librarians to improve records management practices in my library				
5.	My institution provides funds for acquisition of equipment to aide records management practices in my library			≤	

6.	My salary is commensurate with my practices as a librarian				
Educational Support					
7.	My institution organizes training programs that will help my records management practices				
8.	My institution sends me for training outside the institution so as to improve my records management skills				
9.	My institution encourages acquisition of more knowledge and higher degrees in order to improve my practices as a librarian				
Moral Support					
10.	My records Management tasks are difficult for me because I lack moral support from my superiors				
11.	My institution gives room for innovations in my duties in the Library				
12.	My institution gives me and my team accolades after concluding major projects in the library				

Interview Questions

1. Do you adopt digital record management system in your university libraries? If so, mention the specific record management system(s) or practices available in your library
2. What is the level of emerging technologies in your university library, that is to what extent are you aware of emerging technologies that can improve record management practices
3. What is the level of data literacy skills of librarians in your university library?
4. a. Do u have institutional support in your library?
 - b. To what extent do you have institutional support in your university library?
5. What are the new trends you wish to incorporate into the records management practices in your library?

Lead City University Ibadan DO NOT COPY

Bio-data

A. Personal Data

1. **Full Name:** Fehintoluwa Elizabeth OMOSEBI
2. **Address:** No. 4, Road 4b, Lakuru, off Akobo-Olorunda way, Ibadan
3. **Email Address:** fehintoluwa.omosebi@gmail.com
4. **Phone Number:** 07069337879
5. **Date/Place of Birth:** 23 September, 1986/ Ilorin, Kwara State
6. **Nationality:** Nigerian
7. **Name/ Address of Next of Kin:** OMOSEBI, Paul Adeoye/ No. 4, Road 4b, Lakuru, off Akobo-Olorunda way, Ibadan

B. Educational Background

1. Educational Institutions Attended with Date:
 - Lead City University, Ibadan (in View) - 2021-2024
 - University of Ibadan, Ibadan - 2012-2014
 - Lead City University, Ibadan. - 2006-2010
 - Modelak Science College, Ilorin - 2001-2004
 - Unilorin Secondary School, Ilorin - 1999-2001
 - Ajoke Model Nursery and Primary School, Ilorin - 1993-1999

Academic and Professional Qualification with Date:

- Mphil/PhD in Library and Information science In view
- Master of Library and Information Science (MLIS) 2014
- Bachelor of Science Office Technology and Management 2nd Class Upper 2010
- Secondary School Certificate (SSCE) 2004
- First School Leaving Certificate 1999

C. Awards and Fellowship:

- Certificate of National Service, National Youth Service Corps 2011
- Certificate of Honour , NYSC Economic and Financial Crime Commission (EFCC) Ondo State 2011

D. 1. Work Experience:

- i. Senior Librarian 2024**

Lead City University Library,

Lead City University, Ibadan

I carry out my responsibilities as Librarian in charge of Serial's Collections. I participate in automation of the library using KOHA integrated Library Software.

- ii. Associate Lecturer 2018- 2020**

Department of Library and Information Science

Lead City University, Ibadan

I served as an Associate Lecturer in the above named Department to teach.

- Courses taught
 - National and Public Library Systems (LIS 305)
 - Indigenous Knowledge (LIS 215)
 - Use of Library and ICT (GST 101)

- iii. Straight-Gate Publishers Limited November 2014 – January 2016**

Position: Secretary to the Managing Director

- Electronic Editing of Manuscripts
- Organization of information
- Records Management
- Dispensation of imprest
- Reading, monitoring and responding to Managing director's E-mail
- Taking down minutes of meetings

iv. Ministry of Youth Development and Sports. Nov 2010- Oct 2011
(National Youth Service Corp.)

- Handling of welfare issues.
- Computation of attendance for man-hour and absenteeism purpose.
- Hosting of guest e.g arranging hotel accommodation and feeding.
- Handling of invoices for payment

v. Industrial Training Student

❖ **Postgraduate Industrial Trainee:** Lead City University Library (January - March 2013)

During the training, I was able to:

- Process descriptive cataloguing and Shelves library materials and shelve reading.
- Respond to library users queries.
- Sort books, publications, and other items according to established procedure and return them to shelves and other designated storage areas.
- Maintain records of items acquired according to system used.
- Maintain the organization of library materials.

❖ **S.O Medical Laboratory Services**
August - October 2009

❖ **Nigerian Agricultural Co-operative and Rural Development Bank**
(August-October 2008)

E. Membership of Professional Body

- Certified Librarian in Nigeria (CLN) Registration Number 05624, LRCN 2018.
- Member, Nigeria Library Association (NLA)

F. Publications

Thesis/Dissertation

- Olorunleke Fehintoluwa Elizabeth (2014): Influence of Psychological factors and Information literacy skills on use of electronic library resources among Business Administration undergraduates in Private Universities in South-West Nigeria. (M.Sc. Research Project - Unpublished)
- Olorunleke Fehintoluwa Elizabeth (2010): Impact of Information Adequacy on the Managerial Efficiency of School Administration (B.Sc Research Project - unpublished).

Published Refereed Conference Proceeding:

Nigeria Library Association (2018) Annual Conference: Data Driven Institution Libraries: Can the Library Afford to Lag?

Published Articles

- Olayode Motunrayo, **Omosebi Fehintoluwa**, Oladokun Taofeek, Omosebi Paul (2022) Computer Attitude and use of electronic library resources by undergraduate students of private universities in southwest Nigeria. *International Journal of Information Science and Management* 2590
- **Omosebi Fehintoluwa .E** and Olayode Motunrayo (2021):Use of ICT in Curbing Gender Inequality and Improving Women Empowerment. *Library Philosophy and Practice* (e-journal) at the University of Nebraska-Lincoln. <https://digitalcommons.unl.edu/libphilprac/6531>
- Omosebi, P. A and **Omosebi F. E** (2020) Information Literacy Skills and the use of E-library resources among Undergraduates in South-West, Nigeria. *Library Philosophy and Practice* (e-journal) at the University of Nebraska-Lincoln. <https://digitalcommons.unl.edu/libphilprac/4336>.

- Okhakhu D. O and **Omosebi F. E** (2019): Data Driven Institution Libraries: Can the Libraries afford to Lag? *Journal of Management skills and Techniques*, vol 4(2019) issue 1. ISSN: 2141-85-31.
- **Omosebi F. E** and Okhakhu D. O (2017): Psychological factors and the use of E-library Resources among undergraduates in South-West Nigeria. *Library Philosophy and Practice* (ejournal) at the University of Nebraska-Lincoln. <http://digitalcommons.unl.edu/libphilprac/1542>.
- Omosebi, P. A and **Olorunleke F. E** (2015): Web Content Management System: Components and Security. *International Journal of Research in Computer Application and Management*, vol 5 (2015) issue 2 pp 93-95 (Publication)

Contribution to Books:

- **Chapter 10** (Makerspace: An innovative inclusion in Nigerian Libraries) Handbook of Research on Emerging Trends and Technologies in Librarianship by IGI Global. <http://igi-global.com> (2022)
- **Chapter 7** (Information Literacy Skills) Use of Library Resources and Information Literacy Skills Text by David O. Okhakhu (2019). ISBN: 978-978-57421-2-1.

Major Conferences and Workshops Attended:

- 1st Conference of National Institute of office Administrators and information managers (NIOAIM), February 2022 at the Conference Center, Lead City University, Ibadan.
- Liprorich Workshop on Research and Academic Writing, February 2022 at the Conference Center, Lead City University, Ibadan.
- Library, Information and Knowledge management International Conference (LIKIC). October 2020
- Post 2020 Ibadan Sustainable Development Summit (ISDS) Research Writing Workshop in August 2020 (Virtual).

- Workshop on Ethical Conduct in Higher Institutions in October 2018 at the Conference Center, Lead City University, Ibadan.
- Nigerian Library Association Annual Conference: Libraries as social Media catalyst for National Unity and Security in October 2018 at Oyo State Library Board, Ibadan.
- Librarian's Registration Council of Nigeria Annual Conference: Repositioning Libraries for National Development in November in November 2018 at Public Service Institute, Abuja
- Library and Information Service in Scholarly Environment: Opportunities and Challenges on 28th February, 2017 at International Conference Center, Lead City University, Ibadan
- Workshop on Capacity Building in Tertiary Institution with the theme: Research Grant Writing on 20th-21st September, 2016 at International Conference Center, Lead City University, Ibadan
- Applications of KOHA open Sources Integrated Library System on 29th January, 2017 at Main Library, Lead City University, Ibadan
- Library Staff Development Workshop/Seminar with the theme: Proactive Librarianship on 4th November, 2016 at Lead City University Library, Ibadan

J. Extra-Curricular Activities:

- Researching, Reading, Teaching, Photographing and Sporting

K. Names and Addresses of Referees

1. Dr Kayode A. FALEYE

Department of History and International Relations

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2. Dr Oluwaseun O. AJIBARE

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Lead City University, Ibadan, Oyo State, Nigeria
ajibare.oluwaseun@lcu.edu.ng
08068731676

.....

Signature

.....

Date

The University Compliance Certification

This is to certify that this thesis by Fehintoluwa Elizabeth OMOSEBI with Matric Number LCU/PG/002546, from the Department of Information Management, Faculty of Communication and Information Science, Lead City University Ibadan is in FULL compliance with the approved university format and style.

Lead City University Ibadan DO NOT COPY

Signature

Date

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- ¹ M. Dutt, *Cloud Computing and its Application in Libraries*. **International Journal of Librarianship and Administration**, 6 (1), 2018, 19-31.
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- ¹⁰ Atiba University, Oyo town, Oyo State, *Number of Librarians*. University Human Resource Department. 2024
- ¹¹ Elizade University, Ilaramokin, Ondo State, *Number of Librarians*. University Human Resource Department. 2024
- ¹² Wesley University, Ondo Town, Ondo State, *Number of Librarians*. University Human Resource Department. 2024
- ¹³ Adeleke University, Ede, Osun State, *Number of Librarians*. University Human Resource Department. 2024
- ¹⁴ Bowen University, Iwo, Osun State, *Number of Librarians*. University Human Resource Department. 2024
- ¹⁵ Fountain University, Oshogbo, Osun State, *Number of Librarians*. University Human Resource Department. 2024
- ¹⁶ Joseph Ayo Babalola University, Ikeji Arakeji, Osun State, *Number of Librarians*. University Human Resource Department. 2024
- ¹⁷ Redeemer's University, Ede, Osun State, *Number of Librarians*. University Human Resource Department. 2024
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- ²⁰ Mountain Top University, Ogun State, *Number of Librarians*. University Human Resource Department. 2024
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- ²² Bells University of Technology, Otta, Ogun State, *Number of Librarians*. University Human Resource Department. 2024
- ²³ Caleb University, Imota, Lagos State, *Number of Librarians*. University Human Resource Department. 2024
- ²⁴ Covenant University, Otta, Ogun State, *Number of Librarians*. University Human Resource Department. 2024
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- ²⁶ Crescent University, Abeokuta, Ogun State, *Number of Librarians*. University Human Resource Department. 2024
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- ²⁸ Kings University, Odeomu, Osun State, *Number of Librarians*. University Human Resource Department. 2024
- ²⁹ Mepherson University, Seriki Sotayo, Ajebo, Ogun State, *Number of Librarians*. University Human Resource Department. 2024
- ³⁰ Alethia University, Ago Iwoye, Ogun State, *Number of Librarians*. University Human Resource Department. 2024
- ³¹ Venite University, Iloro-Ekiti, Ekiti State, *Number of Librarians*. University Human Resource Department. 2024
- ³² Mercy Medical University, Iwo, Osun State, *Number of Librarians*. University Human Resource Department. 2024
- ³³ Eko University of Medical Sciences, Lagos State, *Number of Librarians*. University Human Resource Department. 2024
- ³⁴ Trinity University, Yaba, Lagos State, *Number of Librarians*. University Human Resource Department. 2024
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- ³⁶ Anchor University, Ayobo, Lagos State, *Number of Librarians*. University Human Resource Department. 2024
- ³⁷ Precious Cornerstone, Ibadan, Oyo State, *Number of Librarians*. University Human Resource Department. 2024

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- ³⁸ Dominion University, Ibadan, Oyo State, *Number of Librarians*. University Human Resource Department. 2024
- ³⁹ Babcock University, Ilishan Remo, Ogun State, *Number of Librarians*. University Human Resource Department. 2024
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Chapter Four

Results and Discussion of Findings

In this chapter, result obtained through primary source is presented for discussion and analyzed in frequency and percentage tables. The research questions were analyzed with descriptive statistics, while linear regression analysis was used to analyses the research hypotheses. The decision rule is as follows; 1.00 – 1.49= very low, 1.50 – 2.49= low,

2.50 – 3.49 = high, 3.50-4.00= very high. Also, the hypotheses was tested 0.05 level of significance.

4.1 Questionnaire Return Rate

The researcher administered three hundred and seventy-eight (378) copies of the questionnaire 378 to professional librarians in forty-nine(49) universities (private, state, and federal) across South-west Nigeria. At the end of the exercise, two hundred and ninety-two of the returned copies of questionnaire from forty-five (45) universities were found useful and included in the final analysis. This represents about 77% return rate which is considered adequate for generalisation. The breakdown of the returned questionnaire presented in Table 4.1.

Table 4.1 Questionnaire Return Rate

S/N	Name and Location of Universities	Administered	Returned
1	Federal University, Oye-Ekiti, Ekiti State	9	7
2	Federal University of Medical and health Sciences, Ilaorogun, Osun State	6	6
3	Federal University of Agriculture, Abeokuta, Ogun State	24	24
4	University of Ibadan, Oyo State	19	17
5	Federal University of Technology, Akure, Ondo State	15	10
6	Atiba University , Oyo Town, Oyo State	1	1
7	Obafemi Awolowo University, Ile-ife, Osun State	18	15
8	University of Lagos, Yaba, Lagos State.	18	14
9	Chrisland University, Ogun State	2	
10	Afe Babalola University, Ado-Ekiti - Ekiti State	9	6
11	Elizade University, Ilara-Mokin, Ondo State	6	5
12	Wesley University Ondo, Ondo State	5	3

13	Adeleke University, Ede, Osun State	8	6
14	Bowen University, Iwo, Osun State	10	6
15	Fountain Unveristy, Oshogbo, Osun State	8	7
16	Joseph Ayo Babalola University, Ikeji-Arakeji, Osun State	4	3
17	Redeemer's University, Ede, Osun State	8	6
18	Ajayi Crowther University, Ibadan, Oyo State	9	7
19	Lead City University, Ibadan, Oyo Sate	11	11
20	Mountain Top University, Ogun State	3	3
21	Achievers University, Owo, Ondo State	3	2
22	Bells University of Technology, Otta, Ogun State	4	3
23	Caleb University, Lagos, Lagos State	4	3
24	Covenant University Otta, Ogun State	10	9
25	Crescent University, Abeokuta, Ogun State	5	3
26	Hallmark University, Ijebi Itele, Osun State	4	2
27	Mcperson University, Seriki Sotayo, Ajebo, Ogun State	3	3
28	Dominican University, Ibadan, Oyo State	3	2
29	Eko University of Medical Sciences, Lagos State	4	3
30	Trinity University, Yaba, Lagos State	2	2
31	Kola Daisi University, Ibadan	3	3
32	Anchor University Ayobo, Lagos State	2	1
33	Precious Cornerstone University, Oyo State	2	2
34	Dominion University, Ibadan, Oyo State	3	2
35	Babcock University, Ilishan Remo, Ogun State	12	9
36	Ondo State University of Medical Sciences, Ondo State	4	3
37	Osun State University Osogbo, Osun State	13	10
38	Ladoke Akintola University of Technology, Ogbomosho. Oyo State	13	12
39	Oyo State Technical University Ibadan. Oyo State	3	2

40	Lagos State University, Ojo. Lagos State	23	23
41	Ekiti State University. Ekiti State	15	13
42	Olabisi Onabanjo University, Ago Iwoye. Ogun State	13	12
43	Adekunle Ajasin University. Ondo State	10	10
44	Tai Solarin University of Education Ijebu Ode, Ogun State	6	6
45	Ondo State University of Science and Technology, Okitipupa. Ondo State	4	3
		378	295

Source: Field work, 2024

The researcher administered three hundred and seventy-eight (378) copies of the questionnaire to librarians in fifty universities (private, state, and federal) across South-west Nigeria but at the end of the exercise, two hundred and ninety-two of copies were returned from forty-five (45) universities and included in the final analysis. This represents about 77% return rate which is considered adequate for generalisation. The demographic analysis of the returned questionnaire presented in table 4.2.

Table 4.2 Demographic Distribution of the Respondents

		Frequency	Percentage
Gender	Male	114	39.0
	Female	178	61.0
	Total	292	100.0
Designation	Librarian I	88	30.7
	Librarian II	44	15.3
	Senior Librarian	85	29.6
	Principal Librarian	51	17.8

	Deputy Librarian	15	5.2
	University Librarian	4	1.4
	Total	287	100.0
Age	≤ 25	27	9.3
	26-35	32	11.1
	36-45	129	44.6
	46-55	76	26.3
	56 and above	25	8.7
	Total	289	100.0
	Years of work Experience	1-5	76
6-10		66	22.6
11-15		77	26.4
16-20		35	12.0
above 21		36	12.3
7		1	.3
55		1	.3
Total		292	26.0
Section	Acquisition	30	10.3
	Information and Communication Technology (ICT)	29	9.9
	Serials	32	11.0
	References	31	10.6
	Circulations	66	22.6
	Cataloguing and classification	56	19.2
	Others (specify)	48	16.4
	Total	292	100.0

Source: Fieldwork, 2024

Table 4.2 presents the demographic distribution of the respondents. The data shows that the gender distribution among the respondents reveals a notable disparity, with a significantly higher percentage of female respondents (61.0%) compared to male respondents (39.0%). This skewed ratio suggests that the librarian profession, at least within this sample, is predominantly female.

In term of designations, the respondents occupy a range of designations. The largest groups are Librarian I (30.7%) and Senior Librarian (29.6%), followed by Principal Librarian (17.8%) and Librarian II (15.3%). Notably, higher positions such as Deputy Librarian (5.2%) and University Librarian (1.4%) are less represented. This distribution indicates a workforce with a significant portion of individuals in intermediate professional stages, with fewer respondents occupying senior executive.

The age distribution of the respondents also shows a concentration of respondents in the mid-career age group, with the largest segment being 36-45 years old (44.6%), followed by those aged 46-55 (26.3%). Younger librarians under 25 years constitute 9.3%, while those in the 26-35 age bracket represent 11.1%. The least represented are those aged 56 and above (8.7%). This suggests a workforce that is predominantly mature, with substantial experience, while also indicating potential future gaps as the older cohort approaches retirement.

The years of work experience among respondents are fairly evenly spread across different ranges, with a slight concentration in the mid-experience levels. Those with 11-15 years (26.4%) and 1-5 years (26.0%) of experience form the largest groups. Respondents with 6-10 years (22.6%) and over 21 years (12.3%) of experience also have notable

representations. This indicates a well-distributed mix of experience levels within the workforce, which can contribute to a dynamic and mentorship-rich working environment.

The data also shows that respondents work in various sections within the library, with the Circulations section being the most represented (22.6%). This is followed by Cataloguing and Classification (19.2%), and other specified sections (16.4%). Acquisition, ICT, Serials, and References each represent around 10% of the respondents. This diversity in functional areas demonstrates the multifaceted nature of library operations and the distribution of personnel across these critical areas, ensuring a comprehensive approach to library services.

4.3 Research Questions

Research Question One: What is the record management practices adopted by librarians in university libraries, Southwest Nigeria?

Table 4.3 Record Management Practices Adopted by Librarians in University Libraries, Southwest Nigeria

Create	SA	A	D	SD	Mean
I usually write emails	149 (51.0)	124 (42.5)	16 (5.5)	3 (1.0)	3.43

I usually circulate emails to various units in the Library	79 (27.1%)	156 (53.4%)	48 (16.4%)	9 (3.1%)	3.04
We observe records management policy in the Library before creating records	97 (33.2%)	158 (54.1%)	34 (11.6%)	3 (1.0%)	3.20
I upload records on the database	129 (44.2%)	130 (44.5%)	32 (11.0%)	1 (.3%)	3.33
I can easily identify relevant information	158 (54.1%)	118 (40.4%)	13 (4.5%)	3 (1.0%)	3.48
Average Mean Capture					3.30
I capture visual records in the library	107 (36.6%)	168 (57.5%)	14 (4.8%)	3 (1.0%)	3.30
I use software packages such as Microsoft word to capture data	145 (49.7%)	122 (41.8%)	25 (8.6%)	--	3.41
I scan records to be managed digitally	133 (45.5%)	127 (43.5%)	27 (9.2%)	5 (1.7%)	3.33
I capture records from physical documents	120 (41.1%)	160 (54.8%)	12 (4.1%)	--	3.37
I capture records from electronic files	160 (54.8%)	117 (40.1%)	15 (5.1%)	--	3.50
Average Mean					3.38

Organise	SA	A	D	SD	Mean
I organize materials chronologically on the computer system	140 (47.9%)	135 (46.2%)	14 (4.8%)	3 (1.0%)	3.41
I organize materials randomly on the computer system	82 (28.1%)	149 (51.0%)	54 (18.5%)	7 (2.4%)	3.05
I organize materials in the cloud	97 (33.2%)	141 (48.3%)	54 (18.5%)	--	3.15

I can easily retrieve needed record	152 (52.1%)	131 (44.9%)	9 (3.1%)	--	3.49
I organize materials on external storage devices	138 (47.3%)	149 (51.0%)	5 (1.7%)	--	3.46
Average Mean					3.31
Pluralize					
I duplicate digital records in the cyber space to avoid loss	112 (38.4%)	152 (52.1%)	25 (8.6%)	3 (1.0%)	3.28
I duplicate digital records via external storage devices	135 (46.7%)	140 (48.4%)	14 (4.8%)	--	3.42
I share digital record with different library personnel	112 (38.4%)	152 (52.1%)	25 (8.6%)	3 (1.0%)	3.28
I have copies of records saved in friends and colleagues' gadgets	56 (19.2%)	147 (50.3%)	60 (20.5%)	29 (9.9%)	2.79
I update records in the original and duplicate versions	141 (48.3%)	134 (45.9%)	17 (5.8%)	--	3.42
Average Mean					3.24
Aggregate Mean					3.31

Source: Fieldwork, 2024

Decision rule: 1.00 – 1.49= very low, 1.50 – 2.49= low, 2.50 – 3.49 = high, 3.50-4.00= very high.

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

Table 4.3 presents the analysis of digital records management practices among Librarians in university libraries in Southwest Nigeria. The results shows that the respondents exhibit a high engagement in the creation of records through various means, as reflected in the overall average mean of 3.30. The majority of respondents frequently write emails ($\Sigma = 3.43$), circulate emails to various units ($\Sigma = 3.04$), and observe records management policies before creating records ($\Sigma = 3.20$). Additionally, a significant number of librarians upload records to databases ($\Sigma = 3.33$) and can easily identify relevant

information (Mean = 3.48). This demonstrates a structured approach to creating and managing records, ensuring information is systematically documented and easily retrievable.

The capturing of records is a vital practice, with an impressive average mean of 3.38, indicating robust engagement in this activity. Librarians capture visual records ($\Sigma = 3.30$) and utilize software like Microsoft Word for data capture ($\Sigma = 3.41$). They also frequently scan records for digital management ($\Sigma = 3.33$) and capture data from both physical documents ($\Sigma = 3.37$) and electronic files ($\Sigma = 3.50$). This suggests that librarians employ a variety of tools and methods to ensure comprehensive documentation and digital preservation of records, enhancing the accessibility and longevity of information.

Organizing records effectively is crucial for efficient information retrieval, as evidenced by an average mean of 3.31. Respondents organize materials chronologically on computer systems ($\Sigma = 3.41$), though some also use random organization (Mean = 3.05). A significant portion organizes materials in the cloud ($\Sigma = 3.15$) and on external storage devices ($\Sigma = 3.46$). Additionally, librarians find it easy to retrieve needed records ($\Sigma = 3.49$), indicating that the organizational strategies employed are effective and user-friendly, facilitating quick access to information when required.

The practice of duplicating records to prevent loss, with an average mean of 3.24, is crucial for data security and redundancy. Librarians frequently duplicate digital records in cyberspace ($\Sigma = 3.28$) and via external storage devices ($\Sigma = 3.42$). They share digital records with colleagues ($\Sigma = 3.28$) and update both original and duplicate versions ($\Sigma =$

3.42). However, there is less consensus on saving copies in friends' and colleagues' gadgets ($\Sigma = 2.79$), indicating some variability in this practice. Overall, the commitment to duplication highlights a proactive approach to data preservation and disaster recovery.

Combining all these practices, the aggregate mean of 3.31 indicates that librarians in university libraries in Southwest Nigeria are generally engaged in all aspects of digital record management practices. They are involved in s creation, capturing, organizing, and duplicating techniques to maintain comprehensive and accessible records.

Research Question Two: What is the level of awareness of the emerging technologies of librarians in university libraries, Southwest Nigeria?

Table 4.4: Awareness of the Emerging Technologies of Librarians in University Libraries, Southwest Nigeria

Perception	HA	A	SA	NA	Mean
I have heard about emerging technology	191 (65.9)	90 (31.0)	9(3.1)		3.63
I have heard about emerging technology but know nothing about it	97 (33.2%)	108 (37.0%)	28 (9.6%)	59 (20.2%)	2.83
I know I have come across emerging technologies but know just a little about them	106 (36.3%)	127 (43.5%)	26 (8.9%)	33 (11.3%)	3.05
I have come across emerging technologies and know much about them	141 (48.3%)	123 (42.1%)	16 (5.5%)	12 (4.1%)	3.35
I am familiar with some emerging technologies	152 (52.1%)	125 (42.8%)	6 (2.1%)	9 (3.1%)	3.44
Average Mean					3.26
Comprehension	HA	A	SA	NA	Mean
I know of the different types of emerging technology(s) available	158 (54.1%)	119 (40.8%)	9 (3.1%)	6 (2.1%)	3.47
I understand the use of Internet of things technology(s) available in my university	173 (59.2%)	104 (35.6%)	12 (4.1%)	3 (1.0%)	3.53
I am aware of the best emerging technology that suites my work duties	148 (50.7%)	118 (40.4%)	15 (5.1%)	11 (3.8%)	3.38
I have access to the emerging technology(s) that are available	140 (47.9%)	127 (43.5%)	19 (6.5%)	6 (2.1%)	3.37
I understand how to acquire needed skills for the use of emerging technology	143 (49.0%)	133 (45.5%)	10(3.4 %)	6 (2.1%)	3.41
Average Mean					3.43
Projection					
I can utilize the best emerging technology useful in my practices as a librarian	145 (49.7%)	129 (44.2%)	15 (5.1%)	3 (1.0%)	3.42

Emerging technologies will project my relevance in my practices as a librarian	3 (1.0%)	164(56.6%)	112 (38.6%)	11 (3.8%)	3.84
Emerging technologies will give me better access to information in my practices	165 (56.5%)	121 (41.4%)	6 (2.1%)	--	3.54
Emerging Technology will improve my output practices as a librarian	161 (55.1%)	125 (42.8%)	6 (2.1%)	-	3.53
Emerging technology will make me align with new trends in my career	167 (57.2%)	113 (38.7%)	12 (4.1%)	--	3.53
Average Mean					3.57
Aggregate mean					3.42

Source: Fieldwork, 2024

Key: Highly Aware (HA), Aware (A), slightly aware (SA), Not aware (NA).

Decision Rule: 1.00 – 1.49= very low, 1.50 – 2.49= low, 2.50 – 3.49 = high, 3.50-4.00= very high.

Table 4.4 presents an analysis of the results on the awareness of emerging technologies among librarians in university libraries, Southwest Nigeria. Awareness of emerging technologies is measured under three dimensions, namely; perception, comprehension and projection.

In the domain of perception, the results indicate that the perception of emerging technologies among librarians is significantly positive, with an average mean of 3.26. A large majority, 65.9%, have heard about emerging technologies ($\Sigma = 3.63$), indicating high awareness. However, 33.2% acknowledge having heard about them but know nothing beyond the name ($\Sigma = 2.83$), suggesting a gap between awareness and

understanding. Many respondents (36.3%) have come across emerging technologies but know just a little ($\Sigma = 3.05$). Notably, 48.3% of respondents have encountered emerging technologies and know much about them ($\Sigma = 3.35$), showing that while general awareness is high, detailed knowledge varies. Lastly, 52.1% of librarians are familiar with some emerging technologies ($\Sigma = 3.44$), highlighting a solid foundational awareness among the majority.

Librarians' comprehension of emerging technologies is quite robust, with an average mean of 3.43. Most respondents (54.1%) are aware of the different types of emerging technologies available ($\Sigma = 3.47$), and a significant number understand the use of the Internet of Things (IoT) in their universities ($\Sigma = 3.53$). Awareness of the best emerging technologies suited to their work duties is notable, with 50.7% acknowledging this ($\Sigma = 3.38$). Additionally, 47.9% have access to the emerging technologies available ($\Sigma = 3.37$), and 49.0% understand how to acquire the necessary skills for their use ($\Sigma = 3.41$). These figures suggest that librarians not only recognize emerging technologies but also comprehend their practical applications and how to integrate them into their professional activities.

The projection of emerging technologies in librarians' professional practices is viewed very positively, as indicated by an average mean of 3.57. Librarians believe they can utilize the best emerging technologies in their practices ($\Sigma = 3.42$), with 56.6% stating that these technologies will enhance their relevance ($\Sigma = 3.84$). The belief that emerging technologies will improve access to information is strong ($\Sigma = 3.54$), and 55.1% of respondents think these technologies will improve their output practices ($\Sigma = 3.53$).

Additionally, 57.2% feel that emerging technologies will help them align with new career trends ($\Sigma = 3.53$). This high level of optimism underscores the perceived value of emerging technologies in enhancing both the efficiency and relevance of librarians' work.

Combining all dimensions—perception, comprehension, and projection—the aggregate mean of 3.42 indicates that librarians in university libraries in Southwest Nigeria have a strong overall awareness and positive outlook towards emerging technologies. They exhibit a good balance of awareness, understanding, and anticipation of the benefits that these technologies can bring to their professional lives.

Research Question Three: What is the level of data literacy skills of librarians in university libraries in Southwest Nigeria?

Table 4.5 Level of Data Literacy Skills of Librarians in University libraries in Southwest Nigeria?

Novice Stage	VH	H	L	VL	Mean
My level of knowledge about search terms is	160 (54.8%)	123 (42.1%)	9 (3.1%)	--	3.52
My getting to know about search skills for needed information is	138 (47.3%)	139 (47.6%)	15 (5.1%)	-	3.42
My familiarity with forms of data available in my library is	152 (52.1%)	126 (43.2%)	14 (4.8%)	--	3.47
My ability to Identify the most appropriate search tool is	137 (46.9%)	138 (47.3%)	17 (5.8%)	--	3.41
My ability to distinguish between different information sources is	153 (52.4%)	131 (44.9%)	8 (2.7%)	--	3.50
Average Mean					3.46

Advanced Beginners' stage	VH	H	L	VL	Mean
My level of search skills for needed information is	154 (52.7%)	132 (45.2%)	6 (2.1%)	--	3.51
My ability to synthesize information relevant to my work is	126 (43.2%)	154 (52.7%)	9 (3.1%)	3 (1.0%)	3.38
My recognition of the best method for data/information retrieval is	135 (46.2%)	145 (49.7%)	12 (4.1%)	--	3.42
My ability to define a search strategy by using appropriate keywords and concepts is	145 (49.7%)	130 (44.5%)	17 (5.8%)	--	3.44
My ability to identify key points and arguments is	150 (51.4%)	118 (40.4%)	21 (7.2%)	3 (1.0%)	3.42
Average Mean					3.43
Competent Stage					
I can decide the search terms before engaging in information gathering with little or no supervision	160 (54.8%)	124 (42.5%)	8 (2.7%)	----	3.52
I can convert data from one format or file type to another with little or no supervision	142 (48.6%)	137 (46.9%)	13 (4.5%)	--	3.44
I can sort my data with little or no supervision	139 (47.6%)	143 (49.0%)	10 (3.4%)	--	3.44
I can create meaningful graphical representations of data with little or no supervision	129 (44.2%)	144 (49.3%)	16 (5.5%)	3 (1.0%)	3.37
I can create meaningful tables to organize and visually present data with little or no supervision	140 (47.9%)	137 (46.9%)	15 (5.1%)	---	3.43
Average Mean					3.44

Proficient Stage	VH	H	L	VL	Mean
I can interpret graphical representations of data	138 (47.3%)	133 (45.5%)	21 (7.2%)	--	3.40
I can interpret tables to organize and visually present data	112 (38.4%)	157 (53.8%)	23 (7.9%)	--	3.30

I can read and download online materials	167 (57.2%)	116 (39.7%)	6 (2.1%)	3 (1.0%)	3.53
I can use wide range of retrieval tools and resources effectively	146 (50.0%)	134 (45.9%)	9 (3.1%)	3 (1.0%)	3.45
I can critically appraise my own findings and those of others	135 (46.2%)	148 (50.7%)	6 (2.1%)	3 (1.0%)	3.42
Average Mean					3.42
Expert Stage					
My judgement of the best method of analyzing data from different sources is	117 (40.1%)	162 (55.5%)	13 (4.5%)		3.36
My being able to apply and work with data in ethical manner is	122 (41.8%)	144 (49.3%)	23 (7.9%)	3 (1.0%)	3.32
My being able to present information in tables, charts, bars and graphs is	114(39.4)	136(47.1)	36(12.5)	3 (1.0%)	3.25
My being able to identify specialist search tools appropriate to individual information needs is	115 (39.4%)	138 (47.3%)	33 (11.3%)	6 (2.1%)	3.24
My being able to access the credibility of data gathered is	114 (39.0%)	154 (52.7%)	18 (6.2%)	6 (2.1%)	3.29
Average Mean					3.29
Aggregate Mean					3.41

Source: Fieldwork, 2024

The decision rule is as follows; 1.00 – 1.49= very low, 1.50 – 2.49= low, 2.50 – 3.49 = high, 3.50-4.00= very high. Also, the hypotheses was tested 0.05 level of significance.

Key: Very High (VH), High (H), Low (L), Very Low (VL).

Table 4.5 presents and analysis of data literacy skills among librarians in university libraries, Southwest Nigeria. Data literacy skills is measured through five dimensions namely, novice, advance beginners, competence, proficient and experts. At the novice stage, the librarians exhibit a solid foundational knowledge in various aspects of data literacy, with an average mean of 3.46. The highest mean score (3.52) indicates that

librarians are well-versed in search terms, with 54.8% reporting very high knowledge. Similarly, they are knowledgeable about search skills ($\Sigma = 3.42$) and familiar with the forms of data available in their libraries ($\Sigma = 3.47$). They also show a good ability to identify the most appropriate search tools (Mean = 3.41) and distinguish between different information sources ($\Sigma = 3.50$). This indicates a strong base in data literacy among the respondents, essential for efficient information retrieval and management.

In the advanced beginners' stage, the librarians demonstrate improved data literacy skills with an average mean of 3.43. The highest mean score (3.51) is associated with their level of search skills for needed information, where 52.7% rate their skills as very high. They also display a good ability to synthesize information relevant to their work ($\Sigma = 3.38$) and recognize the best methods for data/information retrieval ($\Sigma = 3.42$). Additionally, their ability to define a search strategy using appropriate keywords and concepts ($\Sigma = 3.44$) and identify key points and arguments ($\Sigma = 3.42$) highlights their growing proficiency in handling and utilizing data effectively.

At the competent stage, the librarians maintain a high level of proficiency in data literacy, with an average mean of 3.44. Their highest mean score (3.52) shows that they can decide on search terms before engaging in information gathering with little or no supervision. They are also adept at converting data from one format to another ($\Sigma = 3.44$) and sorting data ($\Sigma = 3.44$). Furthermore, they can create meaningful graphical representations of data ($\Sigma = 3.37$) and tables to organize and present data ($\Sigma = 3.43$) independently. These skills indicate their ability to manage data effectively and present it in a comprehensible manner.

In the proficient stage, librarians demonstrate a high level of expertise in data literacy, with an average mean of 3.42. The highest mean score (3.53) reflects their ability to read and download online materials, with 57.2% rating their skills as very high. They are also proficient in using a wide range of retrieval tools and resources ($\Sigma = 3.45$) and critically appraising their own findings and those of others ($\Sigma = 3.42$). Additionally, they can interpret graphical representations of data ($\Sigma = 3.40$) and tables ($\Sigma = 3.30$), underscoring their advanced capabilities in data interpretation and critical evaluation.

At the expert stage, the librarians exhibit advanced data literacy skills, with an average mean of 3.29. The highest mean score (3.36) is for their judgment of the best methods for analyzing data from different sources, where 55.5% rate their skills as high. They also show proficiency in applying and working with data ethically ($\Sigma = 3.32$) and presenting information in tables, charts, bars, and graphs ($\Sigma = 3.25$). Their ability to identify specialist search tools appropriate to individual information needs ($\Sigma = 3.24$) and assess the credibility of data gathered ($\Sigma = 3.29$) indicates a comprehensive understanding of advanced data management and evaluation techniques.

The overall aggregate mean of 3.41 suggests that librarians in university libraries in Southwest Nigeria possess strong data literacy skills across all stages—from novice to expert. They demonstrate a solid foundational knowledge, advanced search and synthesis skills, proficiency in data management and presentation, and expertise in data analysis and ethical application. This comprehensive skill set enables them to effectively manage, utilize, and present data, enhancing their efficiency and effectiveness in their professional roles.

Research Question Four: What is the level of institutional support given to librarians in university libraries, Southwest Nigeria?

Table 4.5: Institutional Support Given to Librarians in University Libraries, Southwest Nigeria?

Items Technical Support	Very High Extent	High Extent	Low Extent	Very Low Extent	Mean
My institution provides software and hardware to support records management practices in my library	120 (41.5%)	154 (53.3%)	15 (5.2%)	--	3.36
My institution provides internet connectivity to aid records management practices in my library	137 (46.9%)	143 (49.0%)	12 (4.1%)	--	3.43
My institution subscribes to cloud computing services to aid records management practices in my library	118 (40.4%)	136 (46.6%)	35 (12.0%)	3 (1.0%)	3.26
Average Mean					3.35
Financial Support					
My institution provides funds for training and retraining of librarians to improve records management practices in my library	108 (37.0%)	121 (41.4%)	62 (21.2%)	1 (.3%)	3.15
My institution provides funds for acquisition of equipment to aide records management practices in my library	89 (30.5%)	118 (40.4%)	84 (28.8%)	1 (.3%)	3.01
My salary is commensurate with my practices as a librarian	80 (27.4%)	108 (37.0%)	76 (26.0%)	28 (9.6%)	2.82
Average Mean					2.99
Educational Support					
Educational Support	Very High Extent	High Extent	Low Extent	Very Low Extent	Mean
My institution organizes training programs that will help my records management practices	74 (25.3%)	139 (47.6%)	69 (23.6%)	10 (3.4%)	2.95

My institution sends me for training outside the institution so as to improve my records management skills	71(24.3%)	114 (39.0%)	106 (36.3%)	1 (.3 %)	2.87
My institution encourages acquisition of more knowledge and higher degrees in other to improve my practices as a librarian	37(17.9%)	58(58%)	43(20.8%)	69(33.3%)	3.17
Average Mean					2.99
Moral Support					
My records Management tasks are difficult for me because I lack moral support from my superiors	65 (22.3%)	129 (44.2%)	79 (27.1%)	19 (6.5%)	2.30
My institution gives room for innovations in my duties in the Library	3(1.0%)	75(26.0%)	167(57.8%)	4(1.4%)	2.82
My institution gives me and my team accolades after concluding major projects in the library	79 (38.2%)	92 (44.4%)	28 (13.5%)	8 (3.9%)	3.40
Average Mean					2.84
Aggregate Mean					3.04

Source: Fieldwork, 2024

The decision rule is as follows; 1.00 – 1.49= very low, 1.50 – 2.49= low, 2.50 – 3.49 = high, 3.50-4.00= very high. Also, the hypotheses was tested 0.05 level of significance.

Key: Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE)

Table 4.5 presents the result of the analysis of institutional support given to librarians in university libraries, Southwest Nigeria. In this study, institutional support was examined under technical support, financial support, educational and moral support. In the

dimension of technical support, the results indicate a high level of technical support in university libraries across Southwest Nigeria. This is indicated by the average mean of 3.35. A significant portion of the respondents (53.3%) report that their institutions provide software and hardware to a high extent, with a mean score of 3.36. Similarly, internet connectivity is well-supported, with 49.0% indicating a high extent and a mean score of 3.43. Cloud computing services are slightly less supported but still noteworthy, with a mean score of 3.26. These findings suggest that technical resources are largely accessible, facilitating effective records management practices.

Financial support is moderately provided, as indicated by an average mean of 2.99. Training and retraining funds are relatively available, with 41.4% reporting a high extent and a mean score of 3.15. Funding for the acquisition of equipment also has moderate support, with a mean score of 3.01. However, the salary commensurate with librarians' practices received a lower mean score of 2.82, reflecting a possible area for improvement in aligning compensation with job responsibilities. Overall, financial support shows room for enhancement to better support librarians' needs.

Educational support also averages a mean of 2.99, indicating a moderate level of provision. Training programs within institutions are somewhat available, with 47.6% reporting a high extent and a mean score of 2.95. However, external training and higher degree encouragement are less supported, with mean scores of 2.87 and 3.17, respectively. This suggests that while there is some support for continuous education, more efforts could be made to provide opportunities for external training and advanced degrees.

Moral support appears to be the least provided, with an average mean of 2.84. A significant number of respondents (44.2%) feel their tasks are difficult due to a lack of moral support from superiors, reflected in a low mean score of 2.30. Room for innovation is moderately supported (Mean = 2.82), and receiving accolades for major projects is more positively noted with a mean score of 3.40. Enhancing moral support could improve job satisfaction and motivation among librarians.

The overall aggregate mean of 3.04 suggests that institutional support for librarians in Southwest Nigeria is moderate. While technical support is strong, financial and educational support are areas with potential for improvement. Moral support, in particular, needs significant attention to ensure librarians feel valued and motivated in their roles. Addressing these gaps can lead to more effective records management practices and a more satisfied workforce.

4.4 Presentation of Hypotheses

H₀₁: There will be no significant influence of emerging technologies awareness on digital records management practices of librarians in university libraries, Southwest Nigeria

Table 4.6 (a-c): Influence of Emerging Technologies Awareness on Digital Records Management Practices of Librarians in University Libraries, Southwest Nigeria

Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.472 ^a	.223	.220	6.74875

a. Predictors: (Constant), Awareness

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	3793.792	1	3793.792	83.296	.000 ^b
	Residual	13208.236	290	45.546		
	Total	17002.027	291			

a. Dependent Variable: DRM

b. Predictors: (Constant), Awareness

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	37.268	3.182		11.713	.000
	Emerging Technology Awareness	.562	.062	.472	9.127	.000

a. Dependent Variable: DRM

Table 4.6(a-c) presents the result of regression analysis on the influence of emerging technologies awareness on digital records management practices of librarians in university libraries, Southwest Nigeria. The model summary table (Table 4.6a) provides essential information about the regression model's fit. The R value of .472 indicates a moderate positive correlation between awareness of Emerging Technologies and Digital Records Management (DRM) practices among librarians in university libraries, Southwest Nigeria. The R Square value of .223 suggests that approximately 22.3% of the variance in DRM practices can be explained by the awareness of emerging technologies. This value is significant enough to suggest that awareness has a meaningful impact on

DRM practices, though it also indicates that other factors contribute to the remaining 77.7% of the variance.

The ANOVA table (Table 4.6b) assesses the overall significance of the regression model. The F-value of 83.296 is highly significant ($p = .000$), indicating that the regression model provides a better fit to the data than a model with no predictors. This implies that awareness of emerging technologies significantly influences DRM practices among librarians in university libraries in Southwest Nigeria.

The coefficients table (Table 4.6c) offers detailed insights into the relationship between the awareness of emerging technologies among the respondents and their DRM practices. The unstandardized coefficient (B) for the constant is 37.268, which represents the expected mean value of DRM practices when awareness is zero. The B value for awareness is .562, meaning that for each unit increase in awareness of emerging technologies, DRM practices are expected to increase by .562 units. The standardized coefficient (Beta) of .472 reinforces the moderate positive relationship identified earlier. The t-value of 9.127, with a significance level of .000, confirms that the relationship between awareness and DRM practices is statistically significant.

Overall, the analysis reveals a statistically significant influence of emerging technologies awareness on digital records management practices among librarians in university libraries in Southwest Nigeria. This suggests that initiatives to increase awareness of emerging technologies could positively impact the efficiency and effectiveness of DRM practices in these libraries. In line with this, the null hypothesis stating that there will be no significant influence of awareness of emerging technologies on the digital record

management practices of librarians in university libraries in Southwest Nigeria is hereby rejected

H₀₂: There will be no significant influence of data literacy skill on the digital record management practices of librarians in university libraries in Southwest Nigeria

Tables 4.7 (a-c): Influence of Data Literacy Skill on Digital Records Management Practices of Librarians in University Libraries, Southwest Nigeria

Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.536 ^a	.288	.285	6.46166

a. Predictors: (Constant), Data Literacy Skills

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4893.633	1	4893.633	117.204	.000 ^b
	Residual	12108.395	290	41.753		
	Total	17002.027	291			

a. Dependent Variable: DRM

b. Predictors: (Constant), Data Literacy Skills

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	33.972	2.990		11.362	.000
	Data Literacy Skills	.377	.035	.536	10.826	.000

a. Dependent Variable: DRM

Table 4.7(a-c) presents the result of regression analysis on the influence of data literacy skills on digital records management practices of librarians in university libraries, Southwest Nigeria. The model summary table (Table 4.7a) provides a snapshot of the

regression model's fit. The R value of .536 indicates a moderate to strong positive correlation between data literacy skills and digital records management (DRM) practices. The R Square value of .288 suggests that 28.8% of the variance in DRM practices can be explained by data literacy skills. This indicates a significant influence of data literacy skills on DRM practices, although other factors still account for the remaining 71.2% of the variance.

The ANOVA table (Table 4.7b) tests the overall significance of the regression model. The regression sum of squares (4893.633) and the residual sum of squares (12108.395) combine to form the total sum of squares (17002.027), representing the total variance in DRM practices. The F-value of 117.204 is highly significant ($p = .000$), indicating that the regression model is statistically significant and that data literacy skills have a substantial impact on DRM practices.

Furthermore, the coefficients table (Table 4.7c) provides detailed information about the influence of librarians' data literacy skills on DRM practices of academic libraries in Southwest Nigeria. The unstandardized coefficient (B) for the constant is 33.972, representing the expected mean value of DRM practices when data literacy skills are zero. The B value for data literacy skills is .377, indicating that for each unit increase in data literacy skills, DRM practices are expected to increase by .377 units. The standardized coefficient (Beta) of .536 confirms a moderate to strong positive relationship between data literacy skills and DRM practices. The t-value of 10.826, with a significance level of .000, reinforces the statistical significance of this relationship.

The analysis reveals a statistically significant influence of data literacy skills on digital records management practices among librarians in university libraries in Southwest Nigeria. This suggests that enhancing data literacy skills among librarians could lead to more effective Digital Records' Management (DRM) practices. In line with this, the null hypothesis stating that there will be no significant influence of data literacy on the digital record management practices of librarians in university libraries, Southwest Nigeria is hereby rejected.

H₀₃: There will be no significant influence of Institutional support on the digital record management practices of librarians in university libraries, Southwest Nigeria

Tables 4.8 (a-c): Influence of Institutional Support on the Digital Record Management Practices of Librarians in University Libraries, Southwest Nigeria
Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.107 ^a	.012	.008	7.61253

a. Predictors: (Constant), Institutional Support
ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	196.363	1	196.363	3.388	.067 ^b
	Residual	16805.664	290	57.951		
	Total	17002.027	291			

a. Dependent Variable: DRM

b. Predictors: (Constant), Institutional Support
Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	61.960	2.283		27.139	.000

Institutional Support	.118	.064	.107	1.841	.067
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a. Dependent Variable: DRM

Table 4.8 (a-c) presents the result of regression analysis on the influence of institutional support on the digital record management practices of librarians in university libraries, Southwest Nigeria. The model summary (Table 4.8a) indicates a weak relationship between institutional support and digital records management (DRM) practices. The R value of .107 signifies a very weak positive correlation. The R Square value of .012 suggests that only 1.2% of the variance in DRM practices is explained by institutional support, indicating a minimal impact of institutional support on DRM practices.

In addition, the ANOVA table (Table 4.8b) tests the overall significance of the regression model. The F-value of 3.388 with a significance level of .067 suggests that the model is not statistically significant at the 0.05 level. This implies that the influence of institutional support on DRM practices of librarians in university libraries, Southwest Nigeria is not strong enough to be considered statistically significant.

Furthermore, the coefficients table (Table 4.8c) provides detailed information about the predictor (institutional support) and its relationship with the dependent variable (DRM practices). The unstandardized coefficient (B) for the constant is 61.960, representing the expected mean value of DRM practices when institutional support is zero. The B value for institutional support is .118, indicating that for each unit increase in institutional support, DRM practices are expected to increase by .118 units. The standardized coefficient (Beta) of .107 confirms a very weak positive relationship between institutional

support and DRM practices. The t-value of 1.841, with a significance level of .067, indicates that this relationship is not statistically significant.

Overall, the analysis reveals that institutional support does not have a significant influence on digital records management practices among librarians in university libraries in Southwest Nigeria. This suggests that factors other than institutional support are more critical in determining the effectiveness of DRM practices. Therefore, the null hypothesis stating that there will be no significant influence of institutional support on digital record management practices of librarians in University libraries, Southwest Nigeria is hereby rejected.

H₀4: There will be no combined significant influence of emerging technologies awareness, data literacy skills and institutional support on digital record management practices of librarians in university libraries, Southwest Nigeria

Tables 4.9 (a.-c) Combined Significant Influence of Emerging Technologies Awareness, Data Literacy Skills and Institutional Support on Digital Record Management Practices of Librarians in University Libraries, Southwest Nigeria

Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.606 ^a	.368	.361	6.11031

a. Predictors: (Constant), Institutional Support, Awareness, Data Literacy Skills

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	6249.285	3	2083.095	55.793	.000 ^b
	Residual	10752.743	288	37.336		
	Total	17002.027	291			

a. Dependent Variable: DRM

b. Predictors: (Constant), Institutional Support, Awareness, Data Literacy Skills

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	20.663	3.745		5.517	.000
Emerging Technology Awareness	.355	.061	.298	5.782	.000
Data Literacy Skills	.286	.036	.408	7.892	.000
Institutional Support	.081	.052	.073	1.565	.119

a. Dependent Variable: DRM

Table 4.9 (a-c) presents the result of the multiple regression analysis on the combined influence of emerging technologies awareness, data literacy skills, and institutional support on digital records management practices among librarians in university libraries, Southwest Nigeria. The model summary (Table 4.9a) indicates a moderate relationship between the independent variables such as emerging technologies awareness, data literacy skills, and institutional support and Digital Records Management (DRM) practices. The R value of .606 signifies a moderate positive correlation. The R Square value of .368 indicates that 36.8% of the variance in Digital Records Management (DRM) practices can be explained by the combined influence of these predictors. The adjusted R Square value of .361, which adjusts for the number of predictors in the model, supports

this finding, suggesting a significant combined impact on Digital Records Management (DRM) practices.

In addition, the ANOVA table (Table 4.9b) tests the overall significance of the regression model. The F-value of 55.793 with a significance level of .000 indicates that the regression model is statistically significant, meaning that the combined influence of emerging technologies' awareness, data literacy skills, and institutional support on Digital Records Management Practices of librarians in university libraries, Southwest Nigeria is significant.

In the same vein, the coefficients table (Table 4.9c) provides detailed information about each predictor's relationship with the dependent variable (Digital Records Management practices). The unstandardized coefficient (B) for the constant is 20.663, representing the expected mean value of Digital Records' Management practices when all predictors are zero. The B value for awareness is .355, indicating that for each unit increase in awareness of emerging technologies, DRM practices are expected to increase by .355 units. The standardized coefficient (Beta) of .298 and a t-value of 5.782 with a significance level of .000 suggest a significant positive impact of awareness on DRM practices of librarians in university libraries, Southwest Nigeria.

For data Literacy Skills, the B value for data literacy skills is .286, indicating that for each unit increase in data literacy skills, DRM practices of librarians in university libraries, Southwest Nigeria are expected to increase by .286 units. The significance level of .000 suggest a significant positive impact of data literacy skills on DRM practices.

However, the B value for institutional support is .081, indicating that for each unit increase in institutional support, Digital Records Management practices are expected to increase by .081 units. The standardized coefficient (Beta) of .073 and a t-value of 1.565 with a significance level of .119 suggest that the impact of institutional support on Digital Records Management practices of librarians in university libraries, Southwest Nigeria is not statistically significant when combined with the other predictors.

The analysis reveals that there is a significant joint influence of emerging technologies awareness and data literacy skills on digital records management practices among librarians in university libraries in Southwest Nigeria. However, institutional support does not significantly contribute to Digital Records' Management practices when combined with the other two predictors. In line with this, the null hypothesis stating that, there will be no combined significant influence of emerging technologies awareness, data literacy skills and institutional support on digital record management practices of librarians in university libraries, Southwest Nigeria, is hereby rejected.

4.5 Thematic Analysis of the Interview Responses

In order to triangulate the responses received from the questionnaire, the researcher also conducted brief interview with library manager across South-west Nigeria. The responses further shed light on the research findings and provide the needed context librarians' responses.

Awareness of Emerging Technologies that can be used in Digital Records Management

The responses show that majority all librarians are highly aware of various emerging technologies related to digital records management. Several of the library managers interviewed mention specific technologies such as Koha, DSpace and others that have been adopted. However, the responses revealed that adoption of latest technologies in the libraries is low.

Digital Records Management Practices

The responses showed that digital record management practice is a routine practice in all the institutions. As pointed out by an interviewee; “the library is basically a records management institution, so data management is what we do daily”. This means that majority of the institutions engage in records management. However, the responses further show that few of the libraries are fully engaged in digital records management. Majority of the libraries have integrated library management system mainly used to create bibliographic information about information resources. Others also make use of institutional repositories.

Data Literacy Skills of Librarians

The librarians interviewed revealed that data literacy skills vary among the library. The responses show that library managers rate the data literacy of professional as high. However, some of the librarians observed that it would be difficult to rate the data literacy skills of all professional librarians as only a few librarians are actually engaged in digital record management process. This means that until academic libraries are fully

automated and technologies integrated into all aspect of library activities, it may be difficult to determine the data literacy skills of all librarians

Institutional Support for Digital Records Management Practices

The responses indicate a moderate level of institutional support for digital records management in the universities. All of the public funded universities revealed that the saving grace is the Education Tax Fund (ETF) which engage in targeted interventions to help the library and other units in the university. However, public universities all pointed out that, apart from the ETF, little funding and other support is coming from the University management, this is due to financial constraints.

Interestingly, the library managers interviewed from private universities reported high level of institutional support covering finding, technical support and training for employees. This reveals a divergence in the organisational culture between private and public funded universities in South-west Nigeria

4.6 Discussion of Findings

The study examined the influence of emerging technology awareness, data literacy skills and institutional support on digital records management in academic libraries in Southwest Nigeria. The study sought to answer three research questions and test four hypotheses through the collection of quantitative studies complemented by qualitative interviews with selected library managers.

The finding from research questions on the digital records management practices revealed that librarians in university libraries in Southwest Nigeria are actively engaged in all aspects of digital records management practices. The interview responses however,

suggested that the task of digital records management is often limited to one section of the library. This finding aligns with the work of scholars who underscore the importance of librarians' involvement in digital records management to maintain relevance in the digital era¹⁶. Similarly, a study found that Indian university librarians' engagement in digital records management is critical for the efficient organization and retrieval of digital information. On the other hand, a study conducted in South Africa reported that digital records management practices is below expectations. The researcher reported that the lack of established standards, policies, and processes, insufficient resources, as well as a lack of expertise and training, made it difficult for academic libraries to maintain and manage their digital resources. In addition, digital records management systems continue to evolve which often makes it difficult for academic libraries to keep up with technological development¹⁶.

This reflects the submission of library managers interviewed in a related study who reported that infrastructural challenges often limit the extent of digital records management practices in academic libraries. This was echoed in the South African studies where scholars reported challenges such as inadequate technology infrastructure, and legal concerns, they also struggled with limited money and teamwork. Indeed, the study conducted in academic libraries in the Northwest region of Nigeria revealed that majority of records are still being generated in paper format and only a minute level of digital records management is going on in the libraries¹⁶.

Another scholar in Nigeria also submitted that digital records management practices are below average in Nigerian academic libraries. The author reported that majority of the librarians understand the value of emerging technologies like blockchain, cloud computing, and the Internet of Things for managing their records. However, they are hindered by the lack of infrastructure, technical support, and expertise is causing these technologies to be adopted more slowly¹⁶. Therefore the finding of digital records management practices may reflect what they librarians

have the capability to do and not what majority are currently doing. This is demonstrated in their level of awareness of emerging technologies applicable to digital records management practices.

The Research question two focused on the awareness of emerging technologies for digital records management among librarians in university libraries in Southwest Nigeria. The finding indicates a strong overall awareness and positive outlook towards emerging technologies among the librarians. However, the finding from the interview conducted with Heads of libraries suggest that majority of the librarians are aware of emerging technologies due to personal effort and not because these technologies are available in their institutions.

According to the findings from library managers, most library have rely on integrated library management system, institutional repositories and scholarly databases as their favorite digital records management system. This is supported by the responses of the librarians who also added that academic librarians are quite aware of various emerging technologies that can contribute to service quality including digital records management. A group of Nigerian scholars found that majority of the librarians are aware of emerging technologies. However, despite their awareness about the use of AI in university libraries, academic librarians' primary barrier to adopting new technologies is their fear of losing their jobs, even though they are aware that these innovations will facilitate effective user satisfaction.

The fear of the unknown was also touched upon in the interview responses of library managers. A library manager submitted that majority of library managers in Nigeria are aware of emerging technologies but they are reluctant to adopt them because librarians

may see them as rivals or threats¹⁶. This means that awareness does not necessarily mean acceptance.

The current study however shown that majority of the respondent understand the advantages of using emerging technologies as shown by the average score in the projection section which indicates the understanding of the benefits and threats of emerging technologies. A scholar suggested that an understanding the full range of benefit is important of emerging technologies which means that academic librarians should develop the skills essential to be relevant in this fourth industrial revolution by keeping up with the latest technological advancements.

The importance of awareness was also emphasised by a scholar found that Tanzanian librarians' awareness of emerging technologies significantly influenced their adoption and utilization in library practices¹⁶. Similarly, researchers from America also highlighted that technological awareness among U.S. academic librarians was critical for successful digital initiatives¹⁶. Overall, awareness of emerging technology among librarians is widespread as another scholar reported that Nigerian librarians' awareness of technologies like cloud computing and IoT positively impacted their willingness to adopt these technologies in library management¹⁶.

Research question three focus on data literacy skills of librarians. The study found a moderate level of data literacy among the respondents. The self-reported responses was also in line with the evaluation of the library managers interviewed. The managers based their assessment on the knowledge that minimal digital records management is going on in most of the universities with only a few staff getting involved. This finding is

supported by a previous study on the digital literacy skills of Nigerian academic librarians. The study found that the knowledge and abilities that participants assessed as neutral or poor, in addition to those that they ranked as extremely competent, were also disclosed by the study. The librarians assigned a neutral or poor rating to their understanding of network and system security, their aptitude for using firewalls and filtering routers, and their capacity to restrict access to digital information by password or IP-based access. In general, the research findings indicated that over 50% of the librarians assessed their proficiency in digital literacy as moderate. A small percentage of librarians thought highly of their digital literacy abilities¹⁶.

On the other hand, a study conducted in Jordan to determine the digital literacy skills of librarians in that country found a high level of digital literacy skills. The findings show that the librarians have a high degree of digital proficiency. The outcome also demonstrates that librarians' primary obstacle to acquiring the necessary skills is money. Most importantly, the degree of digital literacy has a beneficial impact on how well Jordanian academic librarians adopt and use technology. It was observed that elements such as It was observed that the results were unaffected by variables including sex, age, experience, specialisation, and kind of library¹⁶.

The findings from research question four shows a overall high level of institutional support which is however lacking in moral support for the librarians. The responses from the library managers interviewed also confirmed the submission of the librarians. The library managers submitted that institutional support is moderate due to financial constraints. The result is that the management can fund infrastructure and provide

technical support in order to pass accreditations. However, they are often reluctant to invest on the personnel which explain the perception as low morals. The study found that institutional support for librarians in Southwest Nigeria is moderate, with strong technical support but insufficient financial and educational support. This is consistent with findings by scholars who noted that while technical support in Nigerian university libraries is relatively strong, financial and educational support often lag¹⁶. Another scholar emphasized the need for comprehensive institutional support, including financial, educational, and moral support, to overcome challenges in digital records management in African libraries. Scholars highlighted that inadequate financial and educational support negatively affects job satisfaction among Nigerian university librarians, indicating a need for improvement. Researchers in Kenya also found that in Kenyan university libraries, while technical support was adequate, financial and educational support were insufficient, hindering professional development. Furthermore, another scholar, underscored the importance of moral support, noting that recognition and encouragement from superiors are crucial for maintaining motivation and job satisfaction among librarians¹⁶. These studies collectively suggest that to fully empower librarians in Southwest Nigeria, there is a clear need for enhanced financial, educational, and moral support.

The test of the first hypothesis reveals a statistically significant influence of emerging technologies awareness on Digital Records Management (DRM) practices among librarians in university libraries in Southwest Nigeria. This finding is consistent with several related studies. For instance, scholars found that awareness of emerging technologies significantly enhances the adoption and utilization of these technologies in Tanzanian university libraries¹⁶. Similarly, a study conducted in Imo state, Nigeria shows

that the usage of cloud computing technology by libraries in the institutions under investigation was also found, and some of the main advantages of librarians adopting cloud computing technologies include file sharing and resource cost effectiveness. However, when using cloud computing to carry out their duties in the library, librarians also noted security, privacy, and numerous taxation as significant drawbacks. On the basis of these conclusions, suggestions were made¹⁶.

Similarly, another study on cloud computing conclusions showed that university libraries in Africa are not adopting cloud computing at a rapid pace. It was also established that the absence of institutional policy guidelines and cloud service providers' authentication procedures constituted significant obstacles to academic libraries' adoption of cloud computing. The study's recommendations included the full use of cloud computing services by academic libraries to store research data in order to improve visibility and accessibility. Academic library management should establish rules and regulations that will direct the choice of cloud service provider for storing research data¹⁶.

Furthermore, Another study examine the effect of Open Source Software on organisational performance of libraries, It was found that the use of OSS is capable to extend organizational performances as it is an opportunity for the organization to adopt with current change and to emerge IR 4.0 significantly. Every organization including libraries must be aware the dynamic of technology such as OSS across their organization. However, it is important for organization to be careful during selection and customization of an appropriate OSS as it might address specific business requirement in relation to the organizational performance¹⁶.

The analysis of the second research hypothesis reveals a statistically significant influence of data literacy skills on Digital Records' Management practices among librarians in university libraries in Southwest Nigeria. This suggests that enhancing data literacy skills among librarians could lead to more effective Digital Records' Management practices. This finding underscores the critical role that data literacy skills play in the efficient management and utilization of digital records within academic libraries.

Data literacy encompasses the ability to effectively locate, evaluate, interpret, and manage data. For librarians, these skills are vital for handling the increasing volumes of digital information and ensuring that records are accurately maintained, easily accessible, and securely stored. The statistical significance of this relationship indicates that librarians who possess strong data literacy skills are better equipped to implement and maintain effective DRM practices. This includes tasks such as data entry, metadata creation, digital archiving, and ensuring the integrity and confidentiality of digital records. This is supported by researchers who examined digital literacy skills and job performance of librarians in state-owned Universities in Rivers State. The test of hypotheses established that there is a significant relationship between digital literacy skills and the job performance of librarians in the study. Hence, if acquired by all the librarians it can positively influence their job performance and increase patronage of users in the library. Based on the findings, it can be assumed that data literacy skills of librarians would enhance their effectiveness in digital records management while librarians with poor data literacy skills may not be as effective in digital records management¹⁶ . .

Similarly studies also reported that, among the digital literacy skills that 21st-century library employees should have to improve their effectiveness on the job include electronic mail, social networking, PDA use, mobile phone use, Internet browsing, and computer operations. The survey also discovered that library employees learn digital literacy abilities through formal education, attending workshops and seminars, self-study with the help of user guides, peer assistance, self-study, management training, and IT courses. The 21st-century library staff has performed better on the job thanks to digital literacy, which has improved virtual reference services, accelerated the acquisition of online information resources, established and maintained an online catalogue database, and improved user Internet search activities¹⁶.

Improving data literacy skills among librarians not only enhances Digital Records' Management practices but also positively impacts the quality of library services. Effective management of digital records ensures that users have timely and reliable access to information, which is essential for academic research and learning. Enhanced data literacy skills enable librarians to better support users in finding, interpreting, and using digital resources, thereby increasing user satisfaction and the perceived value of the library.

The analysis of the third hypothesis reveals that institutional support does not have a significant influence on Digital Records' Management practices among librarians in university libraries in Southwest Nigeria. This suggests that factors other than institutional support are more critical in determining the effectiveness of Digital Records' Management practices. This is contrary to the findings of another study which found that

institutional support is a significant factor of job satisfaction among librarians in North-east Nigeria. In the same vein, another study which examined librarians' capacity development programmes and job performance in state university libraries in South-South, Nigeria. The result revealed that, there were weak but positive relationships between on-the-job, in-service, off-the-job and mentoring capacity development and librarians' job performance in State university libraries. It was recommended that management should encourage more practice of internal rotation of librarians within the system, proper orientation and delegation of responsibilities and that effective mentor and mentee relationship practice in academic libraries should be strengthened¹⁶.

Researchers have submitted that when institutional support is not up to the expected level, employee performance drops. This is demonstrated in a study on the influence of organisational support on job commitment of librarians in university libraries in South-west Nigeria. Results indicated that the level of personnel commitment was low just as the level of organisational support to personnel in university libraries in South-west, Nigeria was low. The result revealed that organisational support significantly influenced personnel commitment¹⁶

The study also found a significant combined influence of emerging technologies awareness and data literacy skills on Digital Records' Management practices among librarians in university libraries in Southwest Nigeria. However, institutional support does not significantly contribute to Digital Records' Management practices when combined with the other two predictors. The study highlights that emerging technologies awareness and data literacy skills significantly influence digital records management

(DRM) practices among librarians in university libraries in Southwest Nigeria. This combined effect underscores the importance of both technological familiarity and proficiency in handling data for effective Digital Records' Management. Librarians who are aware of and understand how to leverage emerging technologies can more efficiently manage digital records by utilizing advanced tools and methods. Simultaneously, strong data literacy skills enable librarians to accurately organize, analyze, and retrieve digital information. This synergy between technology awareness and data literacy creates a robust foundation for effective Digital Records' Management practices, ensuring that digital records are not only well-maintained but also easily accessible and secure.

Conversely, the study found that institutional support does not significantly contribute to Digital Records' Management practices when considered alongside emerging technologies awareness and data literacy skills. This finding suggests that while institutional support, such as funding and infrastructure, is essential, it is not as critical as the individual competencies of the librarians themselves. The skills and knowledge that librarians possess play a more decisive role in Digital Records' Management practices than the support provided by their institutions. This indicates that libraries might benefit more from investing in training programs and professional development opportunities to enhance librarians' technological and data literacy skills rather than solely focusing on institutional support measures. This approach can lead to more sustainable improvements in DRM practices by empowering librarians with the necessary expertise to manage digital records effectively.

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