

**Information Quality, System Quality and Use of Digital Library Resources among  
Postgraduate Students of in Private Universities, Oyo State Nigeria**

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of Communication and Information Sciences, Lead City University, Ibadan, Oyo  
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Information Science (MLIS)**

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### Certification

This is to certify that this thesis was carried out by **Timothy Akinlolu OKE** with Matriculation Number **LCU/PG/001067**, in the Department of Information Management under my supervision in the Faculty of Communication and Information Science, Lead City University, Ibadan, Nigeria and that the work has not been previously submitted.

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## **Dedication**

This thesis is dedicated to God Almighty for His sufficient grace over my life.

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## Abstract

Quality postgraduate research depends on the availability and accessibility of current, diverse and relevant information resources which is available through the digital libraries. However, despite the advantages, digital libraries created by academic libraries often received less patronage compared to other digital resources. In view of this, the study examines the influence of information quality and system quality in the motivation to use digital library resources among postgraduate students of private university students in Oyo State. The study adopted the descriptive survey research design. Population of the study include ,789 postgraduate students from Dominion University, Ibadan and Ajayi Crowther University, Oyo. The research instrument was a structured questionnaire. Data collected was analysed using both descriptive and inferential statistics. The results of the data analysis shows that information quality ( $R^2 = 0.152$ ;  $p = 000$ ) has a moderate influence while system quality ( $R^2 = 0.021$ ;  $p = 014$ ) has a weak but significant influence on the motivation to use digital library resources among postgraduate students. In addition, the study found that both information quality and system quality significantly contribute to motivating students to use digital library resources, with system quality showing a stronger impact. The study concluded that digital libraries are essential resources for postgraduate studies but it uses may be affected by poor perception of information and system quality among other factors. It was therefore recommended that academic library management in private universities should prioritize more frequent updates to digital library resources to ensure students have access to the latest academic resources. It was also recommended that universities should prioritize ongoing usability improvements in the digital library.

**Keywords:** Academic Libraries, Digital Libraries, Digital Information Resources, Information Quality, Information Library Patronage, Systems Success Model, System Quality.

**Word Count:** 267

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## **Chapter One**

### **Introduction**

#### **1.1 Background to the Study**

The use of digital library resources by postgraduate students offers numerous advantages but effective use of these resources may be affected by the students' perception of various characteristics of the digital library system such as information quality and system quality. Academic libraries globally are creating and subscribing to digital library and virtual libraries in order to provide unlimited access to quality and relevant information resources, especially for undergraduate research<sup>1</sup>. Digital library resources comprise extensive collections of material accessible via the Internet, cable television, or alternative remote technological connections. The emergence of digital libraries eliminates the necessity for individuals to visit physical locations for certain types of knowledge; nonetheless, users still require assistance in locating the desired material. In a conventional library structure, a patron can utilize a catalogue to locate a book. A digital library provides users with various access points to locate conventional library resources; yet, much information available online cannot be accessed through a singular, universally recognized identifying method<sup>i</sup>.

Digital libraries significantly enhance modern education by facilitating the sharing of learning resources, thereby promoting distance education as well as on-campus and independent inquiry-based learning. Digital library resource is reputed to offer high-quality materials of various types directly to virtual libraries and open archives, resulting in a rapid growth in the utilization of rich multimedia formats for presenting quality

academic work<sup>ii</sup>. Digital libraries provide an efficient method for disseminating educational resources to students and other users. Digital resources, in reality have become essential in the academic environment. These digital library benefits serve as motivating factor to students as they provide them opportunity to communicate, acquire or download, process and disseminate information on any subject of their interest. These advantages of digital information resources is expected to boost the motivation of postgraduate students to use digital library resources. The motivation to use digital library resources can be explored from the perspective of perceived ease of use and perceived usefulness.

Perceived Ease of Use refers to the extent to which a user believes that using a particular system or technology will be free of effort. In the context of digital library resources for postgraduate students, PEOU can be seen as the degree to which students feel that they can easily navigate, search for, and access the digital library's materials without encountering difficulties. This perception influences their willingness to use these resources for academic research and study<sup>iii</sup>.

For postgraduate students, time is often a critical factor due to the extensive research and writing they undertake. If they perceive the digital library resources as easy to use, it reduces the cognitive burden and effort required to find information, allowing them to focus on analyzing and synthesizing the information for their research. As such, when the digital library interface is intuitive, user-friendly, and offers smooth navigation, students are more likely to adopt and continue using it. Features such as advanced search functions, easy access to full-text articles, and clear categorization of resources can significantly

enhance the perceived ease of use<sup>iv</sup>. In addition to perceive ease of use, students also consider perceived usefulness.

Perceived Usefulness is defined as the degree to which a user believes that using a particular system will enhance their performance or productivity. For postgraduate students, this means their perception of how digital library resources contribute to their academic success, research quality, and overall learning experience. PU reflects the extent to which students believe that the resources provided by the digital library are beneficial for achieving their academic and research objectives<sup>v</sup>. Digital libraries are expected to provide access to a wide range of academic journals, books, and databases, which are crucial for postgraduate research. If students perceive that the digital library helps them access high-quality, relevant, and up-to-date resources that are essential for their studies, they are more likely to be motivated to use it regularly. This perception can be reinforced by the availability of a variety of academic content, including peer-reviewed journals, dissertations, and other scholarly publications, which postgraduate students find useful for deepening their understanding of their research topics<sup>vi</sup>.

Both PEOU and PU are interrelated and contribute significantly to postgraduate students' motivation to use digital library resources. For instance, a digital library that is perceived as easy to use may also be seen as more useful because students can efficiently access the information they need without spending time overcoming technical barriers. Conversely, a highly useful resource that is difficult to navigate might discourage students from using it despite its potential value<sup>6</sup>.

The motivation to use digital library resources can be understood as the outcome of a balance between the perceived effort required to use the system and the perceived benefits gained from using it. When the PEOU is high, students are less likely to be deterred by the effort required to access the library resources, thus enabling them to appreciate its usefulness fully. Likewise, when PU is high, students are more likely to invest time and effort into learning how to use the digital library effectively, even if the system initially appears complex<sup>vii</sup>.

For digital libraries serving postgraduate students, focusing on improving both the ease of use and the perceived usefulness of their resources is crucial. By providing training sessions, tutorials, or user guides, libraries can help students become more comfortable with the digital library's tools, enhancing their PEOU. Additionally, ensuring the availability of current, high-quality, and diverse academic content can improve the PU of the digital library. These efforts collectively enhance students' motivation to adopt digital library resources as essential tools for their academic work, particularly in the context of research-driven programs<sup>7</sup>.

However, even when these factors have been in place, the use of digital information resources among postgraduate students have been reported low, especially in developing countries such as Nigeria<sup>5,6,7</sup>. This matter has occupied the mind of librarians who have explored factors such as awareness, ICT skills, and other range of factors. However, considering the fact that digital information resources have become widely embraced in academic research, attention has shifted to the digital library and the information resources it contains. The factors to be considered in this study are therefore, information quality and system quality of digital libraries.

Information quality refers to the quality of the digital library content particularly as it meets the needs of the target users which, in the context of this study, are the postgraduate student. The quality of digital library resources pertains to their effectiveness in the teaching and learning process<sup>viii</sup>. Information quality is a critical factor that determines the value and effectiveness of digital libraries, especially in academic and research settings. In the context of digital libraries, information quality refers to the degree to which the digital resources meet the needs and expectations of users in terms of accuracy, relevance, timeliness, completeness, and usability. Ensuring high-quality information is essential for digital libraries as it directly influences user satisfaction, continued use, and the overall impact of the library on research, learning, and knowledge dissemination<sup>8</sup>. In studies of information systems, information quality is often measured by accuracy, relevance, completeness, and timeliness.

Accuracy of the information retrieved is one of the greatest selling points of a digital library. It refers to the extent to which the information provided in digital libraries is free from errors and represents facts correctly. In the academic context, the accuracy of digital resources is paramount, as students and researchers rely on this information for their work. Errors or inaccuracies in data, research findings, or scholarly articles can lead to misinformation and flawed research outcomes. Thus, digital libraries must ensure that their content is thoroughly vetted, peer-reviewed, and sourced from credible publishers and databases<sup>ix</sup>. Keyword searching is made more effective when the information produced by the digital library in response to users queries match exactly what they had in mind before approaching the digital library.

Closely related to accuracy as a measure of information quality is relevance. Relevance pertains to how well the information available in the digital library matches the needs and interests of the users. A digital library that offers a vast amount of information but fails to align with users' research topics or academic requirements may not be seen as valuable. Relevance can be achieved by curating collections based on users' areas of study, offering personalized recommendations, and maintaining up-to-date and subject-specific databases. When users find relevant resources efficiently, their perception of the digital library's usefulness and their willingness to use it increase<sup>x</sup>. In addition to being accurate, information users also expect information resources from the digital library to be retrievable in a timely manner.

Timeliness digital library resources refer to the currency and up-to-date nature of the information provided in the digital library. Academic fields are dynamic, with new research, discoveries, and theories emerging regularly. For a digital library to remain relevant, it must provide access to the latest journals, books, and articles. Outdated resources can hinder researchers from staying informed about recent developments in their fields. Timeliness is also important in fields like medicine, technology, and social sciences, where accessing recent studies is crucial for advancing knowledge and applying new methodologies<sup>xi</sup>.

In addition to being timely and current, the information resources from the digital library are also expected to be complete. Completeness involves providing comprehensive and exhaustive coverage of subjects or fields within the digital library. A digital library with a high level of completeness includes not only articles but also books, theses, conference papers, datasets, and multimedia resources, offering a holistic view of a particular subject

area. For researchers, having access to a full range of resources is crucial, as it allows them to explore various perspectives and evidence for their studies. Libraries that achieve completeness can become a one-stop-shop for academic users, enhancing their research experience and efficiency. This is why the digital libraries that provides only abstracts may not enjoy frequent patronage<sup>xii</sup>.

Information quality as an attribute of digital libraries is non-negotiable as the quality of information in digital libraries is directly linked to the quality of research produced by users of such systems. Postgraduate students, faculty, and researchers depend on digital libraries for access to peer-reviewed journals, databases, and other scholarly content. High-quality information enables them to base their research on accurate, relevant, and current sources, which in turn contributes to the credibility and reliability of their own work.

However, it is often difficult for libraries, especially in sub-Saharan Africa to maintain information quality in digital libraries due to factors such as the rapid growth of digital content, varying standards of publishing, and the need for continuous updates. The integration of open access resources, which vary in quality, also poses a challenge for libraries in ensuring that only credible and high-quality information is provided. Digital libraries must invest in curating their collections, training staff in digital resource management, and adopting advanced technologies like AI and machine learning for better content curation and discovery<sup>xiii</sup>. However, as libraries struggle to ensure information quality in digital libraries, they must also ensure system quality.

System quality in the context of digital libraries refers to the technical performance and functionality of the digital library platform, impacting how postgraduate students interact with and experience the system. System quality of digital libraries encompasses several key dimensions such as system reliability, ease of use, responsiveness, security, and technical support. High system quality ensures that digital library resources are accessible, efficient, and user-friendly, which can significantly affect user satisfaction and engagement<sup>xiv</sup>.

One of the qualities of an information system is reliability. It is a critical aspect of system quality as users expect digital libraries to be consistently available with minimal downtime. Postgraduate students conducting their research would like to be assured that they can access the digital library anywhere and anytime; just like they can use the open internet. In a reliable system, users can access resources and services without interruptions, ensuring that they can conduct research or find information at any time. For digital libraries, this means that the system should have robust servers, data backup mechanisms, and failover strategies to maintain service availability<sup>12</sup>. Even when the system is reliable, it must also be easy to use.

A user-friendly interface is essential for a digital library's system quality. This includes intuitive navigation, clear search functionalities, and a seamless user experience. Users, especially those who may not be tech-savvy, need to find the platform easy to navigate to locate resources efficiently. Features like keyword searches, filtering options, and clear categorization of digital resources improve ease of use, making the digital library more accessible to a broader range of users.

Another aspect of system quality which is closely related to ease of use is system performance. The performance of a digital library system involves its speed and responsiveness. This means that pages should load quickly, searches should return results promptly, and users should be able to download or view materials without delays. A system that performs well minimizes user frustration and encourages more frequent use. This is particularly important in academic settings, where students and researchers often work under time constraints and need rapid access to information<sup>xv</sup>.

Another aspect of system quality is the extent to which the digital library supports customisation and personalization. Modern digital library systems often offer personalization features, allowing users to tailor their experience. This might include saving searches, creating personal resource lists, and recommending resources based on previous usage. Such features improve user experience by making the system more responsive to individual needs, thus enhancing overall system quality.

In the modern information environment, system quality is a cornerstone of a successful digital library, as it directly influences how users perceive the system and their willingness to use it regularly. A high-quality system ensures that digital library resources are easy to access, secure, and perform well, thereby supporting the overall mission of the library to provide information efficiently. When system quality is high, users can focus on their research and learning activities without being hindered by technical barriers, making the digital library a valuable and reliable resource for students, researchers, and academics<sup>xvi</sup>.

Information users are now more critical than ever as they tend to evaluate information systems based on various criteria such as information quality and system quality. The motivation to use digital library resources by postgraduate students is no longer a matter of certainty as students now have several other alternatives. These alternative sources of information may be considered as of lesser quality to carefully developed digital libraries but information users have learnt to critically evaluate information system<sup>xvii</sup>. However, there are few studies that have been conducted with the aim of examining the role of information quality and system quality in the motivation to use digital library resources among postgraduate students particularly among private university students in Oyo State.

## **1.2. Statement of the Problem**

Quality postgraduate research depends on the availability and accessibility of current, diverse and relevant information resources which is available through the digital library, especially digital libraries developed by academic libraries. When postgraduate students make use of digital libraries, it provides them with better insight into the state of the art in their areas of research and provide them with adequate information to conduct research that solve the problem of the people instead of research on subjects that have been over flogged. This is why the observed poor use of digital library resources among postgraduate students in Nigeria is a matter that should concern educational stakeholder.

Poor use of digital library resources can lead to poor research outcome, inability to complete research work and stunted national development. In line with this, researchers have examined various factors responsible for the use of digital libraries among various

categories of students including postgraduate students. However, few studies have been conducted on the role of information quality and system quality in the use of digital library resources among postgraduate students particularly among private university students in Oyo State. To fill this gap, this study examines the influence of information quality and system quality in the motivation to use digital library resources among postgraduate students in private university students in Oyo State.

### **1.3 Aim and Objectives of the Study**

The aim of the study is to examine the influence of information quality and system quality in the motivation to use digital library resources among postgraduate students of private university students in Oyo State. The objectives are to:

- i. Identify the level of motivation to use digital library resources among postgraduate students of private university students in Oyo State;
- ii. Determine the perception of information quality of digital library resources among postgraduate students of private universities in Oyo State;
- iii. Determine the perception of service quality of digital library resources among postgraduate students of private universities in Oyo State;
- iv. Ascertain the influence of information quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State;

- v. Examine the influence of system quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State;
- vi. Ascertain the combined influence of information quality and system quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State;

#### **1.4 Research Questions**

The study will be guided by the following research questions;

1. What is the level of motivation to use digital library resources among postgraduate students of private university students in Oyo State?
2. What is the perception of information quality of digital library resources among postgraduate students of private universities in Oyo State;
3. What is the perception of service quality of digital library resources among postgraduate students of private universities in Oyo State;

#### **1.5 Hypotheses**

Following hypotheses will be tested at 0.05 level of significance;

- H<sub>01</sub> There will be no significant influence of information quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State;
- H<sub>02</sub> There will be no significant influence of system quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State;
- H<sub>03</sub> There will be no significant combined influence of information quality and system quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State;

### **1.6 Scope of the Study**

The study focuses on the influence of information quality and system quality on the use of digital library resources among postgraduate students of private universities in Oyo State. There are three variables representing the subject variable of the study. The dependent variable is the motivation to use digital library resources among postgraduate students. This variable is measured by ease of use and perceived ease of use. The first independent variable is information quality which is measured by metrics such as accuracy, relevance, timeliness, completeness. The second independent variable is system quality which is measured by ease of use, performance efficiency, system reliability and, technical support. The population scope indicates the study focus on postgraduate students from private universities in Oyo State. The geographical location of the study is Oyo State of Nigeria.

## 1.7 Significance of the Study

This study is significant as its findings will be valuable for multiple stakeholders in the academic and digital library ecosystem. Primarily, postgraduate students in private universities in Southwest Nigeria stand to benefit from the findings, as the study sheds light on how the quality of information and system features of digital libraries impact their learning experiences. With a better understanding of the digital library's strengths and areas for improvement, students can more effectively navigate available resources, enhancing their academic research, study habits, and overall productivity. By pinpointing aspects of information and system quality that influence usage, the study can empower students to advocate for improved library services that meet their academic needs.

University administrators and library management in private universities are also key beneficiaries of this study. The findings provide them with valuable insights into how information quality—such as accuracy, relevance, and timeliness—affects the satisfaction and engagement of postgraduate students. Additionally, insights into system quality, like ease of use and responsiveness, can guide library management in refining their digital platforms to improve user experience. By addressing the identified challenges in information and system quality, administrators can enhance the digital library's effectiveness, making it a more integral part of the academic support structure for students and staff.

Furthermore, the study offers significant benefits to policymakers in the education sector.

Understanding the interplay between information quality, system quality, and library

resource use among postgraduate students can inform policy formulation aimed at enhancing digital library services in private universities. Policymakers can leverage the study's findings to develop guidelines or standards for digital library operations, ensuring that information delivery systems in higher education institutions are aligned with best practices for academic excellence. This can contribute to improved educational outcomes across private universities in the region, fostering an environment where digital resources play a central role in supporting postgraduate education.

Finally, researchers and scholars in the fields of library and information science and education technology can use this study as a reference point for future research. The study expands the body of knowledge on the factors influencing the use of digital library resources, providing a foundation for further investigations into the impact of digital library systems on academic achievement.

### **1.8 Limitation of the Study**

The study's main limitation is the challenge of obtaining the consent of the institutions selected for the study. Majority of them did not respond on time to the official request for permission to conduct the study obtained from the researcher's institution. This led to some delays in collecting the data from the respondents. In addition, the postgraduate students were often too busy to respond to the questionnaire which also caused further delays.

### **1.9 Operational Definition of Terms**

**Motivation to Use Digital Library Resources:** The drive or desire of postgraduate students of private universities in Oyo State to access and engage with digital library resources for their information needs.

**Perceived Ease of Use:** The extent to which postgraduate students of private universities in Oyo State believe that utilizing digital library resources will be free from effort.

**Perceived Usefulness:** The degree to which postgraduate students of private universities in Oyo State believe that using digital library resources will enhance their performance or productivity.

**Information Quality:** The measure of the value and usefulness of the information provided by digital libraries in private university libraries, including aspects like accuracy, relevance, and completeness.

**Ease of Use:** The degree to which digital library resources is simple and user-friendly, allowing users to access it without difficulty.

**Accuracy:** The extent to which information provided by digital libraries in private university libraries is correct, precise, and error-free.

**Relevance:** The degree to which information provided by digital libraries in private university libraries meets the user's needs and is pertinent to their queries or objectives.

**Timeliness:** The availability of information at the right time from digital libraries in private university libraries, ensuring that it is up-to-date and useful when needed.

**Completeness:** The extent to which the information provided by digital libraries in private university libraries is comprehensive and includes all necessary details.

**System Quality:** The overall performance and functionality of digital libraries in private university libraries, including factors like usability, reliability, and efficiency.

**Performance Efficiency:** The ability of digital libraries in private university libraries to perform tasks quickly and effectively, with minimal resources and time.

**System Reliability:** The consistency and dependability of digital libraries in private university libraries to function as expected over time without failures.

**Technical Support:** Assistance provided by library staff in private university libraries to postgraduate students for troubleshooting and resolving issues related to the use of digital systems and resources.

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## Endnotes

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## **Chapter Two**

### **Literature Review**

This chapter examines the relevant literature related to the subject of this study. The review is deemed crucial to this study, as it offers the researcher insight into the current status of the subject matter. It offers a robust theoretical framework for the current research, allowing the investigator to substantiate the study and distinctly identify the gaps in the existing literature that the present investigation aims to address. The review is beneficial for comprehending the methodology employed by researchers in analogous investigations and the theoretical frameworks that have informed prior research. The chapter is organised under the following headings;

#### 2.1 Conceptual Review

##### 2.1.1 Concept of Digital Library Resources

##### 2.1.2 Motivation to Use Digital Library Resources

##### 2.1.3 Information Quality in Digital Libraries

##### 2.1.4 System Quality in Digital Libraries

#### 2.2 Theoretical Framework

##### 2.2.1 Stimulus Theoretical Framework

##### 2.2.2 DeLeone and McLean Model of Information Success

## 2.3 Review of Empirical Studies

### 2.3.1 Information Quality and Motivation to Use Digital Library Resources

### 2.3.2 System Quality and Motivation to Use Digital Library Resources

### 2.3.3 Information Quality, System Quality and Motivation to Use Digital Library Resources

## 2.4 Conceptual Model

## 2.5 Summary of Gaps in Literature Reviewed

## Endnotes

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## 2.1 Conceptual Review

### 2.1.1 Concept of Digital Library Resources

Digital Library Resources can be defined as the electronic representation of information which can be accessed via electronic system and computer network<sup>xviii</sup>. Digital resources are also known as electronic resources based on the fact that they deliver the collection of information as full text (aggregated) databases, e-journals, image collections, multimedia in the form of CD, tape, internet, web technology, etc. These resources include e-journals, e-discussions, e-news, data archives, e-mail, online chatting, just to mention but a few. Electronic information source are a wide range of products going from electronic periodicals to CD-ROMs, from mailing list to databases, all, having a common feature of being used and sometime modified by a computer<sup>xix</sup>.

Academic libraries have transformed into digital and virtual libraries where books, journals and magazines have changed into e-books, e-journals, and e-magazines<sup>xx</sup>. This has enhanced the global dissemination of information. Electronic resources, such as e-journals, e-books, e-databases, web resources, and e-serials, are accessible in remote areas, dependent on the availability of internet connectivity or offline databases in libraries. Electronic information resources mitigate storage issues and regulate the influx of data. The rapid progression of new technology has revolutionized communication and reduced costs for consumers and businesses. Electronic information sources signify the most recent progress in information technology<sup>xxi</sup>. Digital library resources are becoming more and more important for the academic community. Digital Libraries provide users

with coherent access to a very large, organized repository of information and knowledge<sup>xxii</sup>. Some of these resources are discussed in the following section.

One of the most common gateways to digital library resources is the Online Public Access Catalogue (OPAC). The concept of OPAC emerged in the early 1980s, prompting numerous investigations on its global utilization amid significant apprehension regarding the substitution of old card and book catalogs with OPAC. Despite the extensive research conducted within the profession, there is a paucity of studies regarding the utilization of card catalogues. The historical origins of OPAC trace back to the 1970s, when the initial generation of OPAC was created. This model replicated the card catalogue method and was marked by several deficiencies, including inadequate authority control over names and subject headings, absence of material categories, and insufficient information regarding the portions of books and their utility and availability. The second version of OPAC was developed in the 2000s, incorporating enhanced capabilities such as remote access, diverse search functionalities, improved display and user interface, email delivery, holdings from other libraries, current awareness services, circulation information, and ordering and processing files<sup>6</sup>.

The library catalogue is a crucial service that connects users' needs to the documents within the library. Traditionally, manual information retrieval systems were employed in most libraries to identify and retrieve available materials by consulting card catalogs<sup>xxiii</sup>.

The fast advancement of Information and Communication Technology (ICT) during the past two decades, along with the evolution of Online Public Access Catalogues (OPAC), has facilitated more convenient and accessible access to library collections. The term Online Public Access Catalogue (OPAC) denotes an information retrieval system

consisting of a database of bibliographic entries that detail the books and other materials possessed by a library or library system. OPAC is available online, irrespective of geographical location, facilitating convenience for remote users or through workstations often situated near the library reference desk, thereby enabling users to easily solicit assistance from a trained reference librarian<sup>xxiv</sup>.

Since its establishment in the late 1970s, OPAC has gained widespread recognition as a valuable information retrieval tool, with a substantial quantity of bibliographic entries translated into a computer-readable format utilizing the Machine-Readable Cataloguing (MARC) standard. The growing global acknowledgment of OPAC is primarily due to its capacity to enable users to swiftly and efficiently search for required bibliographical records through basic or advanced queries; eliminate redundant tasks; enhance the quality and breadth of services; provide easier and broader access to diverse information sources; expedite information dissemination; boost the morale and motivation of library personnel; promote collaboration and information sharing; conserve time, space, and resources; and improve the productivity and reputation of the library<sup>xxv</sup>.

Furthermore, the introduction of OPAC enables the search of library information resources through several criteria, including title, author, subject, publisher, keyword, call number, ISBN, and publication date and location. However, the integration of these developing technologies into libraries necessitates new skill needs to maximize their utilization. The success of OPAC deployment in the library significantly relies on the degree to which users are adequately informed about OPAC and trained to acquire the necessary skills to comprehend, accept, and utilize OPAC services more effectively. Consequently, optimal usage of OPAC can be attained by a well-structured training

program, an efficient marketing approach, and enhanced accessibility to internet-connected PCs<sup>xxvi</sup>.

The implementation of OPAC in the library is particularly advantageous for distance learners, as it eliminates the need for them to travel to the library to ascertain the availability of specific books, submit book requests, or search through the library card catalog to determine the call number of a particular book. Through OPAC, distance learners can now access the library's physical collection online from any geographical location, thereby saving time and travel expenses associated with visiting the library in person

The Online Public Access Catalogue enables postgraduate students to look for various materials inside digital library resources, assessing their relevance to their studies. It also provides users the opportunity to connect with other libraries using the Z39.50 protocol. This would allow postgraduate students at the University of Ibadan to extend their access beyond the library's whole collection of books and digital materials, enabling them to explore global academic resources. A list of the available electronic materials is included as an appendix to the project<sup>xxvii</sup>. The OPAC is a digital resource as well as an information system that holds digital information resources. Another of such system is the institutional repository.

The history of Institutional Repositories dates back to the 1930s. Libraries have historically been crucial in the containment, preservation, and dissemination of information. Numerous information technologies have been developed throughout the years to facilitate comprehensive library operations, especially in information storage and

retrieval. University libraries play a crucial role in this development, as they contain the intellectual resources of the institutions. The endeavor to digitize the institution's intellectual property is referred to as digitalization<sup>xxviii, xxix</sup>.

The evolving function of academic libraries includes the establishment of institutional repositories (IRs), which are digital collections that document and safeguard the intellectual contributions of university communities. The history of institutional repositories can be traced to the inception of the World Wide Web (WWW). The e-print service arXiv was established in 1991. It ultimately resulted in the Open Archive Initiative, which facilitates the collaboration of institutional repositories. In 2001, E-prints was established; in 2002, DSpace and HP were created, and the same year saw the development of FEDORA (Flexible Extensible Digital Object Repository Architecture). This software serves as a platform for deploying IRs. These are the programs that offer organized data-entry interfaces for digital resources, facilitating semantic linkages<sup>xxx</sup>.

The incorporation of metadata, or data about data, further enhances semantic linkages by improving the direct findability of resources, as opposed to mere accessibility. The capacity to locate resources refers to the organization of pertinent items according to their significance, incorporating synonyms and accommodating various medium or formats, including text, audio, video, graphics, or any combination thereof.

Numerous writers have articulated definitions of Institutional Repositories (IRs), although the most generally used definition characterizes them as a collection of services provided by a university to its community members for the administration and dissemination of digital resources produced by the institution and its constituents. It is

fundamentally an organizational commitment to the stewardship of digital materials, encompassing long-term preservation when applicable, as well as organization and access or distribution. An Institutional Repository is defined as a digital archive of the intellectual output produced by the faculty, research staff, and students of an institution, accessible to end-users both within and beyond the institution with minimal obstacles to access<sup>xxxii</sup>.

The fundamental attributes of an Institutional Repository (IR) are that it is institutionally defined, scholarly in nature, cumulative and enduring, as well as open and interoperable. Depositing into an Institutional Repository aims to enhance the visibility and accessibility of extensive, localized research. Institutional repositories are advantageous for both the researcher and the researcher's institution. An Institutional Repository (IR) is firmly situated within the DSpace ecosystem, encompassing the development of digital collections, the creation of tools for the gathering, analysis, and authorship of digital material, and the utilization of digital collections and analytical tools to produce novel intellectual outputs.

Consequently, IR may also be regarded as a standard for Digital Scholarship. In Nigeria, the concept of institutional repositories (IRs) is a prevalent topic among tertiary institutions, which regard it as essential for disseminating their resources, thereby enhancing their visibility and improving their performance in the global university web rankings. Over the past three years, Nigerian universities have largely fought with one another to achieve higher positions in the global web metrics ranking of institutions. This competition has fostered a beneficial environment, as numerous institutions are developing innovative strategies to enhance their digital offerings in the public domain,

leading to an increase in Nigerian content online and greater accessibility and shareability of institutional resources<sup>xxxii</sup>.

It was posited that the motivations for establishing repositories differ, and numerous anticipated advantages have been proposed in various literatures. This encompasses advantages for the researcher, the institution, and certain specialties. Academic libraries get advantages from participating in institutional repository projects, which have broader implications for intellectual communication. The principal rationale for convincing academics of the advantages of depositing their work in an institutional repository is increased exposure; by making their research and publications accessible online, rather than solely through subscription-based databases, scholarly journals, or books, their contributions are more likely to be utilized and cited<sup>13</sup>.

Consequently, their reputation will be augmented over time, owing to the recognition they receive from these. Additional advantages for researchers encompass the stewardship and preservation of their articles in digital format, alleviating the necessity to manage this content on a personal computer or website. Numerous advantages are recognized at both the institutional and national levels. In Japan, the Ministry of Education, Culture, Sports, Science and Technology has urged Japanese university libraries to establish institutional repositories to facilitate the dissemination of knowledge both domestically and internationally<sup>14, 15</sup>.

The establishment of institutional repositories in Africa is perceived as a means to provide institutional research outputs to a community with suboptimal access to resources. In Nigeria, digitization offers the benefits of facilitating data sharing, duplication, and

networking due to the digital format of content. It also prolongs the lifespan of records while safeguarding data and documents that may have been eradicated owing to their age.

Postgraduate students find materials in the institutional repository more beneficial than many other resources, as it has a greater number of defended and accepted theses. It also includes a greater number of the lecturers' journal articles and several other university academic resources that will assist them in their scholarly endeavours<sup>xxxiii</sup>.

All academic staff repositories are more accessible through the library resources. Before any lecturer at the University of Ibadan may be promoted, their curriculum vitae, academic journal publications, and other contributions must be uploaded to the library's institutional repository prior to the consideration of their appointment and promotion. The promotion assessors no longer utilize printed copies of scholarly articles but instead access the repository site. As popular as OPAC and institutional repositories are, they are more popular as sources of digital information resources such as e-books and other resources.

A specific format of electronic information is e-books, which are published as a singular entity and are accessible electronically. This issue has gradually evolved over the past decade as e-books have grown increasingly abundant and pertinent to the courses offered. E-books are inherently more advantageous for e-learning than traditional texts because they fulfill the essential e-learning criterion of being unrestricted by time and location, allowing students to study at their own pace and convenience. They also enhance the inefficient procedures related to the distribution of traditional print. The emergence of

new reading devices, such the Amazon Kindle and the Apple iPad, has revitalized the e-book sector and generated significant interest in their potential to enhance e-learning<sup>xxxiv</sup>.

E-books have existed for about a decade; nevertheless, the majority of those in academic contexts have been formatted as PDFs, which are essentially page reproductions of previously published texts. They have been provided to universities and others as aggregations, either directly from publishers or via aggregation services. Such documents can be viewed on-screen using normal PDF readers and are typically accessed via specialized platforms. They have undergone numerous evaluations and publications. Significant study exists regarding the utility of e-books for postgraduate students. Notwithstanding the constraints highlighted by research and reviews, they have achieved a measure of success; for instance, numerous university libraries subscribe to eBook databases, which have become a significant element of postgraduate curricula<sup>xxxv</sup>.

However, there are constraints, which likely contribute to the underwhelming influence of e-books on e-learning compared to initial expectations. Some of these challenges include the necessity for users to possess a desktop computer or laptop that facilitates an enhanced reading experience within a PDF file. This issue is less significant than it previously was; still, reading off-screen continues to be an unpleasant experience. The hesitance of publishers and authors to authorize extensive off-screen printing of their works complicates the ability to thoroughly engage with an entire textbook at one's convenience, mirroring the aforementioned difficulty<sup>xxxvi</sup>.

Nevertheless, the proliferation of computing gadgets and tablets has invigorated the utilization of e-books for educational purposes. Since 2011, it has been particularly

significant because both sales and the variety of eBook devices have increased. Industry watchers have projected that global tablet shipments will continue to grow year on year. This growth has coincided with a rising utilization of the internet by students across a multitude of devices. Consequently, almost fifty percent of undergraduates possess an internet-enabled mobile smartphone. Mobile devices have been identified as a significant trend in education, with an anticipated adoption period of one year or less<sup>xxxvii</sup>.

There exists a multitude of reading devices; some are specifically engineered for e-reading, such as the Amazon Kindle, while others serve as general-purpose tablets. The iPad and Android-based tablets utilize a reader application to provide users with an enriched and mobile reading experience. This increase has resulted in e-books entering a new phase, where they are available in both print and downloadable electronic formats for user devices, allowing students to utilize them at their convenience. The global adoption of these gadgets by students has resulted in numerous educational projects and experiments aimed at exploring the potential and opportunities within the education sector. Some of these have occurred within business schools or similar institutions where it is feasible to recover the expenses associated with delivering such services.

E-book business models are defined by experimenting, as there is no prevailing agreement on the payment structure for e-learning content, if any. There exists a fundamental distinction between open access resources, typically sourced from government educational providers and organized into a learning repository or a federation of repositories (e.g., Merlot, Jorum) for collective utilization, and published, licensed repositories. Consequently, there exists a continuum of models ranging from a straightforward, one-time payment to brief licensing agreements and many intermediaries.

Examples include pay per title — a model in which each title is acquired indefinitely, allowing the purchaser to utilize it at their discretion. This corresponds with current book purchasing practices. Modifications of the aforementioned, wherein access to the acquired title is temporally constrained (per semester) or accompanied by limited printing or other privileges. Subscription models that allow the purchase of aggregated content resemble a library model, facilitating the acquisition of a substantial volume of material for an annual fee, hence granting access and potentially limited printing rights. Apart from e-books, there are numerous other digital library resources.

Digital library resources also encompass full text (aggregated) databases, e-journals, image collections, multimedia in the form of CD, tape, internet, web technology, etc. E-resources include e-journals, e-discussions, e-news, data archives, e-mail, online chatting, just to mention but a few<sup>xxxviii</sup>. Electronic information source are a wide range of products going from electronic periodicals to CD-ROMs, from mailing list to databases, all, having a common feature of being used and sometime modified by a computer<sup>xxxix</sup>. They are available in various forms like digital libraries, online journal magazine, e-learning tutors and online test-full text databases, e-books collections, e-journals covering a variety of subjects, and major bibliographic databases like AGORA and MEDLARS. Besides these, there are collections of Internet resources indexed by subjects. Also, because of the effective presentation with multimedia tools, these e-resources have become the source of information in the 21st century<sup>xl</sup>.

Modern academic libraries have transformed into digital and virtual libraries where books, journals and magazines have changed into e-books, e-journals, and e-magazines. This has increased the global dissemination of information. Electronic resources such as e-journals,

e-books, e-databases, web resources, e-serials amongst others are easily accessible in remote areas provided there is availability of internet or maybe offline database in the library<sup>xli</sup>. Electronic information resources solve storage problems and control the flood of information. The rapid growth of new technologies has changed the communication process and reduced the cost of communication for individuals and organizations. Electronic information sources can be seen as the most recent development in information technology<sup>xlii</sup>. Electronic information sources are becoming more and more important for the academic community.

### **2.1.2 Motivation to Use Digital Library Resources**

The foremost motive for creating digital libraries in academic libraries all over the world is so that information users can take advantage of the resources they offer. However, librarians are equally aware of the dynamic nature of information users so they are constantly on the lookout for what motivate users to use which information system<sup>xliii, xliiv</sup>. Since the emergence of theories and models to test the likelihood of technology acceptance, perceived ease of use and perceived usefulness has topped the list of factors that motivate various categories of users to adopt information systems including digital library resources.

The accessibility of digital library resources is as follows: The extent to which a certain communication system can be utilized with minimal effort. the capacity to locate sought-after information, the utility of the information presented, loading speed, navigational ease, website aesthetics, font dimensions, reliability of the information supplied, accessibility of required services, convenience in service discovery, likelihood of

recommending the website to acquaintances or relatives, and comfort level in utilizing the Internet for information retrieval; Effortless browsing of digital platforms, systematically arranged online catalogs, concise information, and comprehensible terms and conditions on e-retailers' websites<sup>xlv, xlvi</sup>.

The determinants affecting the motivation to use digital library resources have been examined by several scholars and they all come down to users perceptions. Study findings indicated that interface characteristics affect cognitive responses, which in turn predict students' intentions to utilize digital libraries. Navigation, individual differences, and system variables substantially influenced usability. The utility is directly influenced by the qualities and quality of the system. Ultimately, it has been determined that perceived utility exerts the greatest influence on the intention to use digital libraries<sup>xlvii</sup>.

Researchers have examined on aspect of ease of use which is flow comparing user perceptions of mobile libraries with web-based digital libraries in relation to flow experience. Flow experience is described as the optimal experience of an activity, assessed by matching perceived skills with perceived challenges. Studies indicates that a greater number of users experienced flow while utilizing web digital libraries compared to mobile libraries<sup>xlviii</sup>. The perception among scholars is that ease of use motivates information to use digital resources and when this is not the case, the are likely to choose other source of information.

Perceived Ease of usage (PEOU) of Digital Information Resources (DIRs) appears to significantly influence their acceptance and utilization of these systems, hence largely determining the effectiveness of their usage of DIRs. This signifies that usability is a

crucial factor in user acceptance and the degree of utilization of digital information resources. suggested that the perception of undergraduates regarding digital information resources is critically important, as it mostly determines the extent of consumption of these resources in digital libraries. Consequently, digital information resources that LIS undergraduates find more user-friendly are likely to be utilized by them. Furthermore, digital information resources will be seen as user-friendly by LIS undergraduates if system interaction is clearly comprehensible, allowing for flexibility in engagement and ease of learning<sup>xlix</sup>.

This study examined the usage patterns, search behaviours, and perceptions of graduate students on digital library resources, highlighting that research scholars frequently utilize these resources. A study indicates that students utilize digital resources during thesis composition, with science and technology students deeming them the most crucial for their research compared to other fields. A diminished number of pupils are use meta search and alert systems to gather updated information.

Researchers discovered that students exhibit greater acceptance of mobile library services. Their findings suggest that user impression varies from one institute to another, influenced by the services provided. Moreover, consumers exhibit a favourable disposition towards the digital library; nonetheless, the majority remain uninformed about the numerous services it provides. The interface is identified as a significant component in the utilization of digital libraries. Utilized the technology acceptance model, demonstrating that TAM had explanatory capability to forecast intention. Users exhibit a favourable opinion of wireless applications within the realm of library and information

services, with the majority expressing a willingness to participate in offered wireless services.

Information access is described as the capacity to find, acquire, and utilize data or information efficiently. Information access is described as the capacity to discover, retrieve, and utilize information efficiently. Diverse research initiatives in information access aim to streamline and enhance the efficacy of human users in retrieving and processing extensive and cumbersome data sets. Information access pertains to the provision of both unrestricted and restricted access to information. Access to information encompasses various challenges, including copyright, open source, privacy, and security.

Furthermore, researchers characterize access to knowledge as essential for social, political, and economic progress. He emphasized that traditionally, information has been distributed in many formats that are generally accessible, frequently via public libraries. Numerous individuals also depended on others and the media for information. Advancements in computer technology have transformed information accessibility, rendering extensive repositories of business, education, health, government, and entertainment data available on the World Wide Web. Despite the significant influence of technology on the scope and accessibility of digital information, numerous individuals lack access to these resources.

The main objective of the use of digital library resources for academic objectives is to enhance academic efficiency, augment technical proficiency, and alleviate tension during research and learning endeavours. The final decades of the twentieth century were marked by swift transformations in information access and acquisition via electronic

resources, attributable to advancements in information communication technologies (ICTs), thus regarded as the most significant development influencing scholarly communication during that era<sup>30</sup>. An expert concludes that libraries have evolved into digital and virtual entities, where books, journals, and magazines have been converted into e-books, e-journals, and e-magazines. The scholar asserts that "during the past many years, a significant transition has occurred in collection development policies and procedures," with the print medium progressively supplanted by the electronic media<sup>31</sup>.

Academic researchers, particularly at higher learning institutions, have undertaken numerous studies in recent years about the awareness, accessibility, and utilization of electronic library resources to enhance academic output. The supply of electronic resources, as a library function, significantly influences students' academic performance in the current era of online publishing.

Their function encompasses the identification and selection of information, retrieval, storage, and dissemination to the appropriate users at the correct time, in the proper location, at a reasonable cost, and in the suitable format. This paper defines electronic resources and services as the diverse array of electronic and digital information sources accessible to lecturers and students in an academic setting. Fundamentally, electronic library resources encompass primarily electronic books, e-journals, electronic databases, e-papers, e-reference sources, e-content pages, e-prints, electronic learning tools, mailing lists, e-reports, electronic advertising, Open Public Access Catalogue (OPAC), e-news, e-images, e-music, and various other materials in electronic format.

The findings of the study on Indian academics indicated that participants were cognizant of e-resources and the internet. Notwithstanding the prior understanding of e-resources, it was discovered that the majority of the academic community favours print over electronic information resources for their academic work, resulting in diminished utilization of e-resources. The primary issues encountered in utilizing electronic information resources were insufficient training and time constraints.

The accessibility of the Library's resources significantly influences their utilization. This is the rationale for certain colleges conducting research to assess the extent of student access to e-resources. An illustrative example is the examination of the accessibility and retrieval of electronic material at the University of Agriculture Library in Abeokuta, Nigeria. The study's findings indicated that electronic information resources were readily accessible to numerous university members, user-friendly, and that users expressed satisfaction with their search results. The highlighted restrictions were an inadequate number of terminals for accessing and utilizing e-resources, despite considerable demand, as well as insufficient electrical supply. The availability and accessibility of information promote increased utilization of digital resources by users.

Research conducted at many East African institutions about access to digital library resources indicates that, despite the presence of substantial online journal collections, researchers and students frequently see access as inadequate, which impedes their scholarly activities. The research study examined the three critical factors contributing to this discrepancy: availability, access, and utilization of open access institutional repositories. It also analyzed the interconnected issues of technology, awareness, skills, and campus relationships to determine how access and usage can be enhanced<sup>1</sup>.

The utilization of electronic library resources is evidenced by numerous related studies conducted across various academic institutions globally. Electronic library resources have empowered students to obtain information promptly and have mitigated barriers, ensuring equitable access to knowledge regardless of geographical location. He further said that the utilization of the internet and electronic databases enables students to mitigate the time lag inherent in print media, as the processes of production, publication, and delivery of print media have significantly diminished. The electronic format of materials is increasingly replacing the print medium due to its essential advantages.

Investigated students' access, utilization, and understanding of electronic information resources at the University College Hospital (UCH) in Ibadan, Nigeria. The findings indicated that the utilization of electronic information resources was inadequate, primarily due to a lack of awareness and information retrieval skills among students, which hindered effective engagement with these resources and resulted in minimal usage by medical students<sup>li</sup>.

#### **2.4 Concept of Digital Library Resources Availability**

On the utilization of digital library resources, presented the utilization of digital library resources as the use of ICT has the potential to radically alter our very social structure and mode of operation, and this social change will in turn force our educational institutions to react and change as well<sup>lii</sup>. With respect to the role of technology in higher education, broke down the socio-technological movements into three stages<sup>liii</sup>. The first stage, the first personal computing movement of the early to mid –1980s spawned the second, the networking of the late 1980s to mid-1990s; the latter, in turn

envisions the rise of virtual universities during the 2000s<sup>liv</sup>. In advocates of virtual education believe that the traditional model of campus-based teaching, learning and scholarship must adapt to new technological realities, (for example the Internet, digital libraries, broad band multimedia capabilities, etc) or the proponents of distance learning believe that an ICT driven revolution can make higher education more affordable and more acceptable. Most importantly, ICT significantly changes the way learning is conducted with the increase of information and communication technologies for instructional design, delivery and technology supported learning. With the development of information technology, electronic resources are now available for use in libraries. New trends in the computer technology are allowing libraries to do things with more efficient and effective tools.

Information Resources by Postgraduates was presented that electronic information has gradually become a major resource in every university library in recent years<sup>lv</sup>. The growth and diversity of electronic resources, especially e-journals, has led many to predict the extinction of the printed journal. It has been suggested that a new paradigm is sweeping scholarship<sup>lvi</sup>. The global information communications technology (ICT)-dominated world, “place” is less important. The impact of moving from text-based to resource-based learning has involved heavier use of library materials and a demand for more and varied media sources<sup>lvii</sup>. This makes the provision and use of electronic information systems in academic libraries a critical issue for those working in information and library services<sup>lviii</sup>. The pace at which information resources are being produced and converted into electronic formats is greater today than in previous years. In today's information age it would seem that library users would not only be

eager to take advantage of the convenience electronic resources have to offer, but would be fully immersed in the new technologies. Electronic information resources offer today's students new opportunities not available to previous generations. It was argued that while reading an e-journal is not the same as reading a printed issue, many people now acknowledge that electronic documents offer users advanced features and novel forms of functionality beyond those possible in printed form<sup>lix</sup>. Also it has been noted that the advantages of electronic resources over print include speed, ease of use, ability to search multiple files at the same time, ability to save, print and repeat searches, more frequent updating, and the ability to access documents from outside the library (a particular advantage for the distance learner)<sup>lx</sup>. Electronic resources are invaluable research tools that complement the print-based resources in a traditional library. Their advantages include access to information that might be restricted to the user due to geographical location or finances, access to more current information, and provision of extensive links to additional resources or related content<sup>lxi</sup>. The arguments for students using electronic resources are compelling. However, a knowledge of computers and retrieval techniques is needed to search these resources effectively. It is therefore necessary to determine what computer skills students need to access library electronic information resources<sup>lxii</sup>. <sup>lxiii</sup>Noted that students' ability to find and retrieve information effectively is a transferable skill useful for their future lives as well as enabling the positive and successful use of academic electronic resources. The ability to explore the digital environment is a requirement for academic success today. Students are increasingly expected to use electronic information resources at the university. In order to make use of the growing

range of electronic resources, students must acquire and practice the skills necessary to exploit them. Skills learning are essential in a technology driven environment, and it can be enhanced through the use of innovative learning strategies.

Digital library electronic resources have become increasingly substantial components of academic libraries<sup>lxiv</sup>. This is due to the growing development of information technology and its impact on collection development policies in Libraries. In view of this, libraries have transformed into digital and virtual libraries where books, journals and magazines have changed into e-books, e-journals, and e-magazines<sup>lxv</sup>. This has increased the global dissemination of information such that, e-journals, e-books, e-databases, web resources, e-serials amongst others are easily accessible in remote areas. Electronic resources solved storage problems and controls the flood of information by eliminating physical limitations of storing data, access, retrieval and distribution of information to several users within the shortest possible time<sup>lxvi</sup>.

The rapid growth of new technologies has changed the information seeking behavior of users and reduced the cost and time of searching for information in the library. Electronic information resources can be defined as the electronic representation of information which can be accessed via electronic system and computer network<sup>lxvii</sup>. They further buttress that electronic information sources can be seen as the most recent development in academic libraries and that they are available in various forms like e-books, digital libraries, online journal magazine, e-learning tutors and online test. Application of information communication technology (ICT) in libraries has given enough opportunities for the provision of e-resources and its dissemination to suit the needs of its patrons<sup>lxviii</sup>.

The changing trend of users' need and attitude to information is virtually forcing librarians to succumb to the collection and development of electronic resources. Thus, it has been the rights of users to know more about the availability and management of electronic resources<sup>lxxix</sup>. With the changing needs of users and growing popularity of e-resources, academic libraries are gradually migrating from print documents to e-resources. This has led the academic libraries to redesign their collection development policies and its implementation drives, giving every opportunity for equal access to information<sup>lxxx</sup>. The content of libraries is no more restricted to traditional printed resources such as books, magazines or journals but to online resources and other electronic-driven materials<sup>lxxxi</sup>. Electronic library resources facilitate an effective provision of information to all calibers of users, promote collaborative efforts in research; using communication network tools and encourages generation and dissemination of knowledge.

The use of electronic library resources does not however take the place of printed resources but facilitates it through access to large stock of library materials<sup>lxxxii</sup>. The change that has occurred in the world of ICT is what has shifted the content of libraries' resources from printed information to online information resources. Electronic resources give new dimension to learning and have affected education in many ways<sup>lxxxiii</sup>. In spite of the role of electronic resources; it appears that users of Tamale Technical University library seem not aware of the existence of e-resources in the library and its services have not been fully utilized. This has grossly affected effectiveness of research activities and thus requires improvement in terms of awareness creation to sustain adequate usage. In the mist of all these, it seems very little research is known about students' awareness and

utilization of electronic library resources in the Tamale Technical University, hence the need to carry out this study.

The recognition or awareness of the presence of resources without its utilization is meaningless. In this regard the concept of utilization of electronic library resources is significant to students who are the beneficiaries of the resources<sup>lxxiv</sup>. Utilisation of electronic library resources is not only a choice but inevitable in the era of information technology<sup>lxxv</sup>. Libraries are gradually establishing resource sharing to reduce cost and meet the requirements of user demands. This establishes a direct link between libraries and information services with joint influence on knowledge discovery and dissemination in the digital era. The use of information technology has created advance contribution in the information technology field which has improved the services of libraries significantly. Besides, the application of ICT, libraries is providing opportunities to users to access and utilize both online resources and other services effectively<sup>lxxvi</sup>.

Technology offers opportunities to be innovative, as the following discussion of electronic resources and services demonstrates, but it is important to bear in mind that not all Postgraduate students are equal when it comes to access to computing equipment, the availability, speed, and stability of internet connections, or the information skills that are needed to make optimum use of digital libraries.

Access to print-based library materials continues to be important, because not all of the information resources that postgraduate students need are available in electronic format: many of our most valuable research materials are still print-based. Although there has been a shift away from purchasing print materials to be housed in a physical building and

toward providing access to licensed digital resources made available over a computer network, librarians continue to work to resolve issues pertaining to distance delivery of resources that are unavailable in digital format. Online catalogues and indexing and abstracting systems provide Postgraduate students with convenient access to bibliographic information about valuable scholarly documents. When those documents are not available in full-text form online, a demand is generated for delivery from a library's print collection or from the collections of other libraries through interlibrary loans.

Typical solutions for delivery of non-digital formats include the use of mail and courier services, the establishment of collections at designated sites, and the negotiation of agreements with other libraries through consortia. Given that a growing number of learners are accessing library collections online, librarians are working to develop an integrated approach to providing access to electronic resources that facilitates retrieval and reduces confusion. A library website can function as an information gateway, an entry point to a range of online resources, with key components being the library catalogue and journal databases. Most online catalogues permit the integration of electronic books and electronic journals, enabling learners to locate items from digital and physical collections with one search. User services – such as the ability to check due dates, renew materials, and request materials online – are also provided. Gateways may also organize collections and incorporate directories.

As libraries work to enhance their presence on the web, a growing number are investigating the potential of electronic course reserves (e-reserves). The traditional course reserves desk of an academic library, with its limited copies, short loan periods,

and high late fines, can be a considerable source of frustration for students. In the e-reserves model, the library makes available, through the worldwide web, items that faculty have selected and “placed on reserve” for students on a particular course. Many libraries have initiated their own e-reserve projects. Electronic delivery of course reserve material has become a hot topic in the library literature<sup>lxxvii</sup>.

Managing the remote access and authentication issues involved in making digital resources available has become a significant area of support to users of the digital library<sup>lxxviii</sup>. Librarians may be called upon to respond to questions concerning log-in and password information, browser configuration, software installation, and a range of troubleshooting needs. Access problems are hugely frustrating for Postgraduate students, and must be resolved quickly. Ensuring that front-line library staffs are adequately trained, providing clear instructions on the library’s website, and coordinating support activities with computing services personnel can contribute to effective technical support. Postgraduate students also benefit from having a variety of means of contacting the library, including e-mail, web and fax.

## **2.5 Theory of Digital Library Resources Accessibility**

**Accessibility** of information is the Connectivity theory was propounded by a Canadian Known popularly as a learning theory of the digital age, it took its root from the psychological learning theories of behaviourism, cognitivism and constructivism.<sup>lxxix</sup> The connectivism theory states that, Learning is a process that

occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning (defined as actionable knowledge) which can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing<sup>lxxx</sup>. Connectivity theory is based on the following principles: Learning is a process of connecting specialized nodes or information sources. Learning may reside in non-human appliances. Nurturing and maintaining connections is needed to facilitate continuous learning. Learning and knowledge rest in diversity of opinions. Capacity to know more is more critical than what is currently known. Ability to see connections between fields, ideas, and concepts is a core skill. Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities. Decision-making itself is a learning process.

The theory is an alternative to behaviourism, cognitivism and constructivism which are learning theories which were being used in creating instructional environments when technology was not part of learning. They consider learning principally as occurring inside a person and failed to recognize learning that is stored and manipulated by technology. Significance/application: The application of this theory is in two folds: first the use and manipulation of ICT resources. That is display of the knowledge of ICT skills. The second is how these skills and competencies will benefit the academic environment where the library staff serves. It will help them connect to a diversity of ideas; explore capacity to know more, etc as seen in the last five principles of connectivism. Creating, preserving and utilizing information is the basic thrust of librarianship. The theory assists the academic library staff to ensure

that knowledge that resides in a database is connected with the right people in the right context in order to promote learning in academic institutions.

## **1. Theory of Usability of Digital Library Resources**

**Usability Theory** also related to Self-Efficacy Theory. Self-efficacy theory is a psychological theory that originated. It is a theory of how an individual demonstrates his or her ability to perform a particular job or task. It is a person's judgement of his or her capabilities based on mastery criteria and assessment of their abilities to perform specific tasks in relation to goals and standards rather than in comparison with others' capabilities.<sup>lxxxix</sup>

Self-efficacy is an individual's belief in his or her ability to successfully perform a specific task. They also propose that, computer self-efficacy has two levels – general computing and specific computer tasks or application level. While general computing refer to an individual's belief to perform computer tasks across multiple computer domains, specific task or application level refers to an individual's perception of efficacy to perform computer related tasks within a domain like word processing, use of Internet etc. ICT skills' training is found to increase self-efficacy which in turn influences ICT acceptance. ICT self-efficacy focuses on what an individual believes he or she can accomplish with ICT resources. Significance/application: The understanding of the theory will assist the academic library management to know what type of training method to recommend to which category of staff at any particular time. Staff with weak self-efficacy belief (those with little or no confidence in the ability to use ICT resources, uncomfortable with

their computer skills or uncomfortable using ICT resources) may be exposed to the resources practically and at a remedial level. Those with high efficacy level may be exposed to higher or more advanced tasks and training modules. <sup>lxxxii</sup>

## **2.6 Theory of Ease of use of Digital library resources**

**Easy of use theory** <sup>lxxxiii</sup> Submitted that since people are likely to accept easily, such technologies would easily enhance his or her job performance and would be free from effort as indicated by technology acceptance model, it is recommended that, staff be educated on potentials of new technologies to improve job performance before introducing them. Training modules should be highly simplifies and practical training emphasised above theory so that the staff will get used to doing it with less efforts.

Technology Acceptance Model (TAM) The technology acceptance model (TAM) was developed by <sup>lxxxiv</sup> Davis (1989) to explain computer-usage behavior. It models how users accept and use new technology. The model suggests that when library and users are presented with a new technology, a number of factors influence their decision about how and when they will use it. Such factors include: Perceived usefulness (PU) – He further defined the degree to which a person believes that using a particular system or structure would enhance his or her job performance.

They also reviewing perceived ease-of-use, (PEOU) <sup>lxxxv</sup> defined this as the degree to which a person believes that using a particular system would be free from effort. In the context of information technologies, TAM suggests that users formulate a positive

attitude toward a particular technology when they perceived that the technology is useful and easy to use. This model reveals the factors that influence one's attitudes towards acceptability or otherwise of a particular technology to include: perceived usefulness and perceived ease-of-use. As such, lends itself to all studies in library and information science and even beyond the field of librarianship that concerns

## **2.7 Theoretical Framework And Model Development**

The theoretical framework that describes the determinants of system-specific perceived ease of use as individuals evolve from the early stages of experience with the target system to stages of significant experience. Prior research in IS and psychology has established the importance of actual behavioral experience in shaping the evolution of beliefs such as perceived ease of use<sup>lxxxvi</sup>. The framework presents an anchoring and adjustment perspective on the formation and change of system-specific perceived ease of use over time with increasing experience with a target system. Behavioral decision theory suggests that “anchoring and adjustment” is an important general decision making heuristic that is often used by individuals. In the absence of specific knowledge, the heuristic suggests that individuals rely on general information that serves as an “anchor” and in fact, individuals are often unable to ignore such anchoring information in decision-making processes. If additional information becomes available (typically following direct experience with the target behavior), individuals tend to adjust their judgments to reflect the new information but still rely on the initial anchoring criteria. Specifically, Helson (1964) suggests that a subject's response to a judgmental task is based on three

aspects: (1) sum of the subject's past experiences, (2) the context or background, and (3) the stimulus (see also Streitfeld and Wilson 1986). To the extent that minimal context (i.e., specific system information) is given, the subject will make system-specific perceived ease of use evaluations based on prior experiences with systems. As more contextual information (i.e., system-specific information) becomes available, the more the judgment will be made within that context rather than based on previous experience. Specifically, prior to direct experience with the target system, individuals are expected to anchor their system-specific perceived ease of use of a new system to their general beliefs regarding computers and computer use. With increasing experience with the system, individuals are expected to adjust their system-specific perceived ease of use to reflect their interaction with the system (Figure 1). The framework can also be explained in terms of the general-specific distinction from psychology and abstract-concrete distinction from marketing (Bettman and Suajan 1987; Mervis and Rosch 1981). In the absence of much knowledge about the target system and limited direct behavioral experience with the system, individuals will base their perceived ease of use of the target system on general, abstract criteria. With increasing learning and direct experience with the target system, user judgments about the ease of use of the system are expected to reflect specific, concrete attributes that are a result of an individual's direct experience with the system.

In addition to research in psychology, organizational behavior, and marketing that was discussed earlier, the basic arguments of anchoring and adjustment can also be supported from empirical evidence from prior user acceptance research. In the absence of much direct hands-on experience with new systems, user perceptions of ease of use of systems

are not distinct across the different new systems, thus suggesting that in the early stages of user experience with new

systems, there are a set of “common” determinants for system-specific perceived ease of use<sup>lxxxvii</sup>. Specifically, in the early stages of user experience, the initial anchors for system-specific perceived ease of use of a new/target system are expected to be individual difference variables and general beliefs regarding computers based on prior experience with computers/software in general and other systems in the organization. There is some evidence supporting this line of reasoning—general computer self-efficacy<sup>lxxxviii</sup> has been shown to be a strong determinant of perceived ease of use before hands-on experience (Venkatesh and Davis 1996). As users gain experience with the target system, their assessment of the ease of use of the system, while still being anchored to individual difference variables and general beliefs, will adjust to reflect unique attributes of their interaction with the system and the system environment. Recent empirical research demonstrated low correlations between initial perceived ease of use and perceived ease of use after significant direct experience providing support for the idea that adjustments based on direct experience can be important in shaping perceived ease of use over time (Venkatesh and Davis 1996). Further, the original conceptualization of TAM presents an expectancy model, consistent with social cognitive theory<sup>lxxxix</sup> that dictates perceived ease of use (a process expectancy) and perceived usefulness (an outcome expectancy) would be key predictors of intention/behavior. Since the current research builds on TAM, there is an implicit assumption incorporating an outcome-process perspective that dictates other constructs would be “external variables”

influencing key expectancies, thus lending support to the examination of other constructs as possible determinants of perceived ease of use.

A theoretical model based on the framework is proposed as follows. Specifically, control is divided into perceptions of internal control (computer self-efficacy) and perceptions of external control (facilitating conditions), intrinsic motivation is conceptualized as computer playfulness, and emotion is conceptualized as computer anxiety. Computer self-efficacy, facilitating conditions, computer playfulness, and computer anxiety are system-independent, anchoring constructs that play a critical role in shaping perceived ease of use about a new system, particularly in the early stages of user experience with a system. With increasing experience with the system, objective usability, perceptions of external control (facilitating conditions) as it pertains to the specific system, ii and perceived enjoyment from system use are adjustments (resulting from the user-system interaction) that will have an added influence on system-specific perceived ease of use.

Usability Theory studies how humans learn and remember systems, how the human eye processes certain images and other aspects of the user-technology experience, and determines which type of system would allow them to do so the most efficiently and with the least struggle<sup>xc</sup>.

Usability Theory encompasses a group of ideas about how humans interact with technology. As one computing dictionary defines it, usability is “the effectiveness, efficiency, and satisfaction with which users can achieve tasks in a particular environment of a product. High usability means a system is: easy to learn and

remember; efficient, visually pleasing and fun to use; and quick to recover from errors.”<sup>xc</sup>

While the standards in that definition are more concrete, Usability Theory concerns the human factors that would either improve or hinder the ability to achieve the previously-mentioned standards. In other words, Usability Theory studies how humans learn and remember systems, how the human eye processes certain images and other aspects of the user-technology experience, and determines which type of system would allow them to do so the most efficiently and with the least struggle.

Technical communication involves the delivery of clear, consistent, and factual information—often stemming from complex concepts—for safe and efficient use and effective comprehension by users. Technical communication is a user-centered approach for providing the right information, in the right way, at the right time so that the user’s life is more productive. The value that technical communicators deliver is twofold: They make information more usable and accessible to those who need that information, and they advance the goals of the companies and organizations that employ them<sup>xcii</sup>.

The following examples show the value of technical communication with respect to the products and services that technical communicators provide:

- Technical procedures and illustrations that clarify steps and identify parts of a product allow users to focus on getting tasks done efficiently, accurately, and safely.

- Training and instructional materials that teach people new skills make them more employable and productive in their organizations.
- Medical instructions that are informative and comprehensive ensure regulatory compliance and help patients and care providers manage treatment, improve health, and reduce the costs and risks associated with care.
- Well-designed websites that are user-focused make it easier to find information and increase user traffic and satisfaction<sup>xciii</sup>.

Information delivery involves multiple disciplines (for example, writing, editing, graphic design, indexing, instructional design, video scripting, production, etc.) and a variety of media (for example, paper documents, web pages, online help, computer-based training, digitally stored text, audio, video, etc.).

## **2.6 Technology Acceptance Model for Digital Library Resources**

Technology Acceptance Model theories are considered a theoretical Review for this study. The Theoretical Framework one of the theories in information science is more applicable for reviewing its application to digital information resources are utilized. The theory is Technology Acceptance Model (TAM) propounded by Davis in 1989 was adopted for this study<sup>xciv</sup>. The Technology Acceptance Model (TAM) is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it for. These factors are behavioural intentions, attitude and perceived usefulness of the system, perceived ease of use of the system,

individual intention and facilitating or organisation condition. Technology Acceptance Model (TAM) is the most influential extensions of Ajzen and Fishbien's Theory of Reasoned Action (TRA) in the literature. He hypothesized that the attitude of a user toward a system was a major determinant of whether the user will actually use or reject the system. The attitude of the user, in turn, was considered to be influenced by two major beliefs: (i) perceived usefulness and (ii) perceived ease of use having a direct influence on perceived usefulness. Original technology acceptance model (TAM)<sup>xcv</sup>. This theory is relevant to this study on Digital Library resources and its impact on Postgraduate students of the University of Ibadan, Nigeria, According to Davis, Perceived usefulness (PU) element as defined above is relevant to the study because postgraduates students believe that using computer system on offline or online based. Phones and other electronic devices to search for digital library resources electronically enhance their academic activities than the traditional ways of searching information in the library. That is students can read and search for information to do assignment and research faster with the use of technology. Another relevance to the study is the perceived ease-of-use (PEOU) is another element in the theory. The ability of postgraduate students to accept and use library digital resources will ease their usefulness of digital Library and learning becomes easier to them as well as influences their academic activities in their daily life. This efforts to search information in traditional ways are reduced automatically with the use of technology. The researcher adopted this theory because of its relationship to the problem under investigation, for example ease of use, access and utilization.

The theory's relevant to the postgraduate students at the higher education level like University of Ibadan, level of students intends to improve, achieve and go further in

academics should have the ability to explore the digital environment. It was stated that students' ability to find and retrieve information effectively is a transferable skill useful for their future life as well as enabling the positive and successful use of the digital resources while at school<sup>xvii</sup>. Students' use of information systems can be in the form of communicating or posting of information or material by way of electronic mail, bulleting boards, world wide web or other such electronic tools<sup>xviii</sup>.

These theories have inspired many researches and facilitate the development of various solutions and frameworks designed to help both the information users and information service providers. One of such models is Technology Acceptance Model (TAM) which basic principles are applied in this study to examine the Use of Library Electronic Information Resources by Undergraduate Students of Lead City University, Ibadan. They confirms in relevance to this study that the emergence of Information and Communication Technology (ICT) influences information resources acquire in libraries. Due to huge information available in electronic forms, library focus her resources in acquiring equipment, devices and gadgets in electronic formats such as computer system, OPAC (Online Public Access Catalogue), CD ROM, Internet Access, Subscribed Online Database(Questal, Pro Quest, Ebsco, Emerald etc), Online Open Source Databases (Google Scholar, AJOL,) Projector forms (Readers, Screen), E-Books E-Journals etc.

Digital library resources serve as a motivating factor to students as it provides them opportunity to communicate, obtain or download, process and disseminate information on a subject of interest. Digital library resources offer 21<sup>st</sup> century students greater opportunities that are quite different from their traditional library approach resources<sup>xviii</sup>.

Other uses according to authors include the fact that “digital library resources are often

faster in speed than consulting print indexes, especially when searching retrospectively, and they are straight forward when wishing to use combination of keywords. They open up the possibility of searching multiple files at one time, a feat accomplished more easily than when using printed equivalents. It could be said that “improved data transmission facilities will go a long way to reduce the incessant hardship faced by students in the acquisition and generation of data which serves as the basis for research and academic performance improvement<sup>xcix</sup>. This is because the use of digital information by students of today enhance their performance in academic activities. Furthermore, they also revealed that the academic community has accepted that electronic information resources have an impact on their work. However, services currently available to academic staff and students are not being used to their full potential and some are hardly being used at all. Bandura's position, asserted that “students with high self-efficacy regarding computers would also be more likely to explore new technologies, software or databases better<sup>c</sup>.”

There are more opportunities for the Digital Library approach postgraduate students, that they would be more likely to explore a library's website and find that the library has specialized resources, and they might even try some searches on those resources without, or with less, prompting from professors or librarians and without necessary taking library workshops.” General user opinion towards the use of electronic information resources, in particular, CD-ROM, has been positive, with students enjoying using these sources and finding relatively few problems while using them.

Digital Library resources and services are very significant to research and teaching in higher education. The advent of ICTs has completely transformed libraries and

information centres. They have emerged as early adopters of new technologies and act as service points for access to digital libraries. In Nigeria, the Information Gateway, the online library of the National Open University, is responding to the increasing importance of e-learning by developing their services accordingly. This paper highlights the status and importance of online resources, online services in e-libraries, online services in National Open University and the implications of National Open University experiences for e-learning in Nigeria<sup>ci</sup>.

Information Technology (IT) infuses all aspects of modern life, and the growth of digital information continues at an unprecedented rate. Higher education institutions have invested heavily in campus IT infrastructure, and educational philosophy emphasizes learner-centred pedagogy, with learner-centered technology widely available in most of the campuses. The new stored information grew at a rate of approximately 30 percent annually between 1999 and 2002. Dealing with this expanding volume of information and information resources becomes an integral aspect of education policy.

The shift from teacher-centered education has increased the importance of online resources. Students can choose content based on their own learning needs. <sup>cii</sup>Submitted that learner-centred education acknowledges the value of active constructivist learning, including individual learning styles. The student is an active participant in the learning process. Course management systems can be learned to create this environment. Digital library technologies and web-based learning gateways are complementary developments.

Digital Library resources range from archival documents to historical images to primary source materials from scientific field research. These collections may include specific

learning activities or be used as resources for teachers to use. For online resources to be useful, reliable networks, universal access, and a sound IT infrastructure are also needed, it was also observed that online resources demand electricity, PCs, Internet connectivity, and a network.

### **2.1.3 Information Quality of Digital Library Resources**

In the Digital library context, information quality is described as the assessment of users' perceptions on the content quality of Digital library applications on a particular library website. Factors including personalization, completeness, relevance, comprehensibility, and security exemplify attributes that might motivate users to collect or disseminate content and consistently revisit the site. The quality of information significantly impacts user satisfaction inside academic library portals and other domains in Information Systems<sup>ciii</sup>.

The literature assessments of IS success studies indicated that information quality exerted a moderate influence on net benefits<sup>civ</sup>. Prior research on information systems (ISs) has demonstrated that information quality favourably influences perceived value and user happiness, which subsequently considerably affects the motivation to reuse digital library resource<sup>cv</sup>. The results demonstrate the beneficial impact of information quality on user happiness, perceived net benefits, and the intention to reuse. Library users who consider the information quality of the Library 2.0 application as superior to that of others are more inclined to persist in utilizing the system. The quality of information is crucial in evaluating users' perceived net advantages and pleasure, which directly influences the

intention to repeat Library 2.0 applications, as "library services are essentially information-intensive"<sup>evi</sup>.

Scholars evaluated the quality of the digital library, characterized by the quality of information, system quality, and overall service quality. The analysis of users' views of virtual communities and digital libraries has been conducted to comprehend the true nature of the e-quality experienced by users. The user's perception study indicated that digital libraries offer superior information, system, and service quality compared to virtual communities.

An examination of faculty members' utilization patterns of digital information resources and their satisfaction with university resources. Faculty members express dissatisfaction with the university's current e-resources. Service-related issues are the primary cause of dissatisfaction, including restricted titles and access to past issues. Identified constraints include a limited number of titles, restricted access to back issues, challenges in information retrieval, inability to access from home, limited computer availability, and slow download speeds. Nonetheless, inadequate infrastructure and restricted access to these resources constitute the primary cause of unhappiness.

#### **2.1.4 System Quality of Digital Library Resources**

Information systems are usually evaluated based on specific criteria. One of the key considerations in the use of digital library resources is the system quality which focus on parameters such as ease of use, technical support, and performance efficiency among others. System quality pertains to the degree to which systems are 'user-friendly' and may be utilized without significant. This also reflects the quality of the information system,

which is frequently determined by the software and hardware employed. The evaluation of system quality often encompasses the criteria of flexibility, reliability, functionality, usability, data significance, integration, and overall quality. Typically, simplicity of use is employed by the researcher to signify system quality, so establishing the basis for system quality. Experts posit that ease of use is a factor that influences the evaluation of system quality<sup>cvii</sup>.

Ease of use is a crucial aspect of system quality in digital libraries, as it directly impacts user engagement and satisfaction. A digital library that is easy to navigate enables users to find, access, and utilize resources without difficulty. For postgraduate students, who often engage in advanced research activities, intuitive interfaces, clear search functions, and well-organized databases are essential<sup>27</sup>. When digital library systems are designed to be user-friendly, it minimizes the learning curve, allowing students to focus more on their research rather than struggling with the technical aspects of the system. Ease of use is not just about simplicity; it also involves providing meaningful guidance and features like search filters, sorting options, and tutorials that can help users quickly adapt to the platform. Ultimately, a user-friendly digital library enhances the overall experience, making it more likely that students will continue using the platform for their academic needs<sup>28</sup>.

There is ample evidence to show that that users prioritize system quality. Indeed, an expert categorically stated that compatibility and system quality contribute to information users' satisfaction with digital information resources. System quality is thus favorably correlated with both behavioral usage intentions and user satisfaction with the use of the learning system<sup>cviii</sup>.

According to a study, user interface characteristics influence cognitive response which predicts student's intention of using digital library<sup>cix</sup>. Whereas navigation, individual differences and system characteristics significantly affected the ease of use. Furthermore, the pleasure derived from using the system which is referred to as 'flow' is also a big consideration. Where flow experience defined as best experience about an activity that can be done by comparing perceived skills and perceived challenges<sup>cx</sup>. Study reveals that more users experienced flow in using web digital libraries than mobile libraries.

Performance efficiency and system reliability are key determinants of digital library quality, influencing how effectively users can access resources. Performance efficiency refers to the system's ability to provide quick and accurate responses to user queries. In a digital library, this means that searches for journal articles, books, or other materials should be processed rapidly, ensuring that users do not face delays. For postgraduate students, who often work under time constraints to gather information for research projects or assignments, a slow-loading library system can be a significant source of frustration. High performance efficiency ensures that students can swiftly retrieve the information they need, thereby boosting their productivity<sup>31</sup>.

System reliability, on the other hand, focuses on the stability and consistency of the digital library platform. It ensures that users can access the library without interruptions or unexpected downtimes. A reliable digital library minimizes the risk of system crashes or errors that could disrupt users' access to crucial resources. For academic purposes, it is essential that users trust that the system will be available whenever they need it, particularly during critical periods such as exam preparation or thesis writing. Consistent reliability builds confidence among users, encouraging them to rely on the digital library

as a primary resource for their academic work. Together, performance efficiency and system reliability contribute to a seamless user experience, making the digital library a dependable and efficient tool for postgraduate students<sup>35</sup>.

Examined quality of digital library which was defined as the quality of information quality of system and overall service quality of digital library. The comparison of user's perceptions towards virtual communities and digital libraries have been done understand the actual nature of e quality perceived by the users. Based on the user's perception study found that digital libraries provide better information, system and service quality than virtual communities. The studies of the usage pattern of digital information resources and satisfaction with university resources by the faculty members. It is found that faculty members are dissatisfied with current e-resources by the university<sup>exi</sup>. Service-related issues are the main reason for dissatisfaction such as limited title and access to past issues, They identified limited number of titles, limited access to back issues, difficulty in finding information, inability to access from home, limited access to computers and slow download speed as major constraints. However, poor infrastructure and limited access to these resources is the main reason for dissatisfaction.

Another researcher opined that research scholar are frequent users of digital resources of library in this regard this study investigated usage pattern, search behaviour of graduate students and perception towards digital resources. Study reveals that students are using digital resources during thesis writing and science and technology student consider it as the most important for their research compare to other disciplines<sup>exii</sup>. Less number of students are using meta search and alter services to collect update information.

Scholars have suggested that students have higher acceptance of mobile library services<sup>cxiii</sup>. They indicated that user's perception is deferred by the institute to institute and the services they offered. Further, users have positive attitude towards digital library but at the same time most of them are unaware about various services offered by the digital library. It is also found that interface considered to be an important factor to use digital library.<sup>cxiv</sup> Employed technology acceptance model and support that TAM has explanatory power to predict intention. Experts also agreed that users have positive perception towards wireless application in the context of library and information services and most of the users responded affirmatively to be a part of wireless services if offered<sup>cxv</sup>.

Technology offers opportunities to be innovative, as the following discussion of electronic resources and services demonstrates, but it is important to bear in mind that not all Postgraduate students are equal when it comes to access to computing equipment, the availability, speed, and stability of internet connections, or the information skills that are needed to make optimum use of digital libraries.

Access to print-based library materials continues to be important, because not all of the information resources that postgraduate students need are available in electronic format: many of our most valuable research materials are still print-based. Although there has been a shift away from purchasing print materials to be housed in a physical building and toward providing access to licensed digital resources made available over a computer network, librarians continue to work to resolve issues pertaining to distance delivery of resources that are unavailable in digital format. Online catalogues and indexing and abstracting systems provide Postgraduate students with convenient access to

bibliographic information about valuable scholarly documents. When those documents are not available in full-text form online, a demand is generated for delivery from a library's print collection or from the collections of other libraries through interlibrary loans.

Typical solutions for delivery of non-digital formats include the use of mail and courier services, the establishment of collections at designated sites, and the negotiation of agreements with other libraries through consortia. Given that a growing number of learners are accessing library collections online, librarians are working to develop an integrated approach to providing access to electronic resources that facilitates retrieval and reduces confusion. A library website can function as an information gateway, an entry point to a range of online resources, with key components being the library catalogue and journal databases. Most online catalogues permit the integration of electronic books and electronic journals, enabling learners to locate items from digital and physical collections with one search. User services – such as the ability to check due dates, renew materials, and request materials online – are also provided. Gateways may also organize collections and incorporate directories.

As libraries work to enhance their presence on the web, a growing number are investigating the potential of electronic course reserves (e-reserves). The traditional course reserves desk of an academic library, with its limited copies, short loan periods, and high late fines, can be a considerable source of frustration for students. In the e-reserves model, the library makes available, through the worldwide web, items that faculty have selected and “placed on reserve” for students on a particular course. Many

libraries have initiated their own e-reserve projects. Electronic delivery of course reserve material has become a hot topic in the library literature<sup>cxvi</sup>.

Managing the remote access and authentication issues involved in making digital resources available has become a significant area of support to users of the digital library<sup>cxvii</sup>. Librarians may be called upon to respond to questions concerning log-in and password information, browser configuration, software installation, and a range of troubleshooting needs. Access problems are hugely frustrating for Postgraduate students, and must be resolved quickly. Ensuring that front-line library staffs are adequately trained, providing clear instructions on the library's website, and coordinating support activities with computing services personnel can contribute to effective technical support. Postgraduate students also benefit from having a variety of means of contacting the library, including e-mail, web and fax.

The digital library permits postgraduate students to access library and networked resources and services anytime and anywhere that an Internet connection and computing equipment are available. A significant challenge for digital library resources and use in the new era will be to support the range of goals that are already alive in the classroom, rather than simply modify information. Without asking the real value of using digital libraries resources, educators risk failing to see their transformative potentials, and at worst, they risk importing a contrary set of values that are embedded in such systems from their histories in other locations. For digital libraries, such an implicit value could be summarized as “complete information access leads to better education”, just as it may lead to better academic research and work. However, the many educators and librarians

who have stacked unused textbooks and shrink-wrapped software packets in the corners of their rooms know that access is only a beginning.

Postgraduate students' use of different technologies, whether they are traditional materials or digital resources available via the internet, will be informed by and in turn will help construct the kinds of values that retain significance in education. As long as the educator and the assignment follow the status quo, any related source of information is likely to be a smart choice by students according to their assessment of what to do for assignments. Further, postgraduate students are often pressed for time, either by university scheduling or procrastination, and will often find the most efficient ways of completing work, a quality that educators find both admirable and dismaying. The stated and unstated values of an educational context will further intersect with the interests and needs of the students, as well as with availability and nature of technological tools she or he is using.

User satisfaction assessment and preservation is an essential part of library quality management. Within the digital library background, satisfaction refers to "feeling happy with the Digital Library in helping to complete a task"<sup>cxviii</sup>. Consumers' Users' satisfaction with digital libraries satisfaction is closely linked to their experience with Users' satisfaction with digital libraries services. Identifying the typical standards of Digital Library providers requires (i) comprehensiveness, including everything; (ii) accessibility, everything available immediately; (iii) instant-gratification, response speed; (iv) software capacity, seamless; (v) user-friendliness, single interface; and (vi) various formats, wording, images, and audio<sup>28</sup>. On the other hand, when assessing Users'

satisfaction with digital libraries, user satisfaction focusing on the interface and functionality offered by the Digital Library is very important<sup>13</sup>.

Review of Users' satisfaction with digital libraries revealed that one of the techniques of Open Access is self-archiving of e-prints in Open Access journals which makes them available on the Internet as pre-prints or post-prints<sup>98</sup>. -e generic pre-print is an article submitted to a scholarly journal (or intended to be) for peer review and editorial approval. -is term also commonly refers to papers submitted to series without peer review as well as articles not submitted to series. On the other hand, a post-print is the final version of an article that represents the changes made after the peer review and editorial processes. -is can be either a new publisher version or a writer-updated pre-print to match the publisher's changes. E-prints are principally made available as (i) a personal website for the author, (ii) a disciplinary archive containing authors' work on one or more topics worldwide, (iii) an institutional e-print database containing e-prints from writers in a particular educational institution such as departments or organizations as a whole, or (iv) an academic repository of different types of digital work like data sets, online theses, and presentations and technical reports by authors at an institution, including e-prints [95]

The perceived ease of use is defined as "the degree to which an individual believes that it would be effortless to use a particular system"]. In this context, user-friendliness indicates a belief that using Digital Library would require minimal effort. Literature also indicates that accessibility is sometimes related to ease of use<sup>cxix</sup>. Where it is difficult to access a Users' satisfaction with digital libraries, users tend to consider it difficult to use and on the other hand, users are more likely to see it as user-friendly when it is readily available. Other library researchers found that online public access catalog (OPAC)

satisfaction was related to ease of use<sup>cxv</sup>. Based on these findings, the perceived ease of use is thought to have a positive effect on satisfaction. To this end, it is assumed that user-friendliness significantly increases user satisfaction with the Digital Library.

There are several tools available to create useful content; such tools are (a) weblog technology (blogware), content management systems, specifically designed for blogging, (b) blogging tools, including readers, moderators, PDF-saving services, backups, labeling, scanning, reporting, dynamic optimization and indexing, and a wide range of blog-enhancing applications, (c) social networks, to promote communication amongst the community, (d) content management systems (CMS) which makes it possible to modify data from any computer connected to the Internet, making it easier to build, distribute, view, and preserve web content, and usually provide a what you see is what you get (WYSIWYG) text editor that allows the user to see the result when writing without thinking about programming codes, (e) Wikis that is a tool for modifying, improving, or enriching content published by another person, and (f) digital word processors and spreadsheets which are words/tools that can be retrieved from any Internet-connected computer to process platform numbers online<sup>cxvi</sup>. Via these applications, users can access, edit, reformat, and share documents. One of the advantages of this technology is the possibility of producing content in a cooperative and collaborative style<sup>cxvii</sup>.

Digital library creators and their materials, i.e., digital-born, digital turned, and acquired digital, should preserve copyright issues in the production and management of digital libraries in a legal framework to address copyright issues and protect the rights of content creators and owners. It would be a good idea to consider technical protection measures such as e-watermarking, digital signatures, authentication, etc. since Digital Library are in

the process of creating digitally born content to regulate infringement in the digital environment<sup>100</sup>. In the current era of open access (OA) where information is made freely available to users, content producers should be worried about the infringement of copyrights. In addition to uploading digitized content on websites, libraries are digitizing to protect old, fragile documents and posterity. The Digital Library is under contract or has been given licenses to use this material for digital content.

Based on the license terms and conditions, the Digital Library must sensitize and notify users, so that there is no total copyright infringement and a strong obligation to comply with the contract terms and conditions. Many owners of digital media copyright are found to rely on technological mechanisms to regulate access to digital files and recycle works. Since technology can provide protection systems, it also has the potential to create systems that can bypass this kind of protection<sup>cxixiii</sup>. Some of the rights management functions of computer systems could include tracking, identifying, and authenticating users, providing the copyright status of each digital object and limiting its use or charges, handling user transactions by only allowing access to not so many copies, or charging for copies, or transmitting requests to publishers<sup>cxixiv</sup>.

A recent work on digital libraries<sup>z</sup> provides an outline of the library resource discovery environment and explains how technologies, methodologies, and products can adapt to changes in the evolving landscape of information in scholarly communication<sup>cxixv</sup>. s. The author also attempts to evaluate comparative features of library resources discovery products and services available in commercial and open-source discovery systems and so does the case study of the adaptation of library resources discovery tools in Central Library, Tripura University. Open access to information is a generic term used for

information tools made available for large-scale commercial or corporate use in the public domain, regardless of subscription fees or access fees<sup>108</sup>.

There exists a broad range of free open-source codes available to support online libraries and corporate repositories. With e-prints being based on copyright law, business vendors have started providing turn-key systems to support the latter. Whether the author or publisher, the copyright holders of work must allow for open access. It should however be noted that there is no need for open access to change the existing copyright laws. Historically, publishers have also permitted writers to be given newspaper articles. Nevertheless, writers also retained the pre-print rights created for the final published book before the transfer of copyright, which allows them to make those pre-prints available to the public. Owing to this, some publishers refused to publish articles if they were eligible for digital pre-printing but it seems this practice is dying out<sup>cxxvi</sup>.

While reviewing ease of use of digital library resources, it was noted that in the present development, the Digital Library discovery system features were grouped into three categories, namely, (i) large search space, a search can find the data from various data sources; (ii) intuitive usability, like a search engine, simple form with advanced search functions; and (iii) ranking of the results by relevance, the “best” hit is shown first, not necessarily the newest hit. Figure 3 shows 8 Education Research International the developed user-friendly Users’ satisfaction with digital libraries discovery system as a result of this review work<sup>cxxvii</sup>.

Electronic developed user-friendly Digital Library discovery systems features could further be described as follows: (i) a discovery interface that provides access to several of

resources availed by the library in a single-search window. Although this has many definitions in literature, there is an enhancement on specific major features like the central index that represents the metadata, and the full-text content is converted into a single index, the single-search box, relevancy-ranking, and facets. (ii) An end-user interface is the static Hyper Text Markup Language web page designed for searching using a web browser to provide access to the library-availed resources. -e end-user interface provides access to a simple yet advanced search-box where the question is executed when the user enters the search expression. -e advanced query lets the user search according to available conditions and the output is typically a short or full record display format depending on user preference. (iii) Inter-operability with a link-resolver which provides a link to the full-text from a citation record in the search results. (iv) Local search and retrieval which are generally achieved by integrated indexing, search, and retrieval to the collection of interest<sup>cxxviii</sup>.

When carrying out future cross-cultural user studies, digital library researchers may therefore wish to consider the incorporation of MI theory<sup>cxxix</sup>. A practical framework is still needed to guide global digital library design, however. The ideal framework will ideally incorporate findings from the fields of anthropology, cognitive psychology, education, user interface design and digital library development, and will map subjective dimensions of cross-cultural usability into operational design principles. Although this inquiry was ultimately not successful in identifying such a framework, it achieved success in recognizing the need for one and in clarifying the global usability challenges facing digital library design. Exploration of these issues has also led to a deeper appreciation of the problem's complexity, and the need for additional research. The

integration of cultural theory into human-computer interaction studies is still a relatively new area of study. As cultural factors are better understood in relation to interactive technologies, global usability of digital libraries will no doubt improve.

Hofstede's theory<sup>cxxx</sup> has gained wide acceptance among anthropologists, and has been proposed as a framework for cross-cultural design Marcus and. For this reason, it must be considered as a possible alternative to MI theory, for approaching cross-cultural digital library usability. As such, Hofstede offers a useful framework for specifically considering the personal intelligences and digital libraries. For example, a culture's authority structure (power distance), gender distinctions and emphasis on collectivism may all impact a user's comfort level with self-expression when using the collaborative, community-building tools of digital libraries. Uncertainty avoidance may impact a user's willingness to challenge presented viewpoints, or experiment with open-ended digital library activities. Time orientation may affect a user's patience in achieving goals and completing tasks, or influence the perceived credibility of digital library materials. A heightened sensitivity to-wards these interpersonal or intrapersonal factor scan lead to the design of more welcoming digital libraries, libraries that invite broad, distributed participation across cultural groups.

The network is of great importance to libraries to tackle today's burning issues, such as knowledge overload, user diversity, and financial crunch, whereby digital service subscription depends on consortia broader access to digital services at a consequently lower cost. The term electronic library resources define the information processed and digitally driven using hardware and software that offer information that can be accessed by digital electronic users through remote information provider networks or mounted

locally by digital library managers. In reality, it transfers the citadel of historically getting information to a personalized, adaptable, and synergistic culture based on information, communication, and technology (ICT)<sup>xxxxi</sup>. Digital libraries are mainly designed to solve specific library problems. The online collection includes Digital Library e-books, e-newsletters, e-references, theses, and dissertations<sup>xxxxii</sup>. The factors affecting user satisfaction in a Users' satisfaction with digital libraries context can be categorized as ease of access, few download exceptions, and limitations, simplicity of the Users' satisfaction with digital libraries interface design, quality of interaction process, Internet performance, quality assurance service, and ease in communication provided for by a social network.

User perception of the performance of a Digital Library in the processing and distribution of information is characterized by service quality. As with information quality and applications, earlier studies show strong support for the contribution to user satisfaction with digital library Different service quality models have been developed by scholars to test the Digital Library<sup>xxxxiii</sup>. He further submitted that one of the prominent qualities of digital service performance is accession, reliability, accessibility, and responsiveness. Digital library's service quality factor is very important as there is no face-to-face interaction in digital communication. For an open, healthy, sensitive, and well-integrated Users' satisfaction with digital libraries, there should be a favourable user satisfaction.

Digital library creators and their materials, i.e., digital-born, digital turned, and acquired digital, should preserve copyright issues in the production and management of digital libraries in a legal framework to address copyright issues and protect the rights of content creators and owners. It would be a good idea to consider technical protection measures

such as e-watermarking, digital signatures, authentication, etc. since Digital Library are in the process of creating digitally born content to regulate infringement in the digital environment. In the current era of open access (OA) where information is made freely available to users, content producers should be worried about the infringement of copyrights. In addition to uploading digitized content on websites, libraries are digitizing to protect old, fragile documents and posterity. The Digital Library is under contract or has been given licenses to use this material for digital content.

Based on the license terms and conditions, the Users' satisfaction with digital libraries must sensitize and notify users, so that there is no total copyright infringement and a strong obligation to comply with the contract terms and conditions. Many owners of digital media copyright are found to rely on technological mechanisms to regulate access to digital files and recycle works. Since technology can provide protection systems, it also has the potential to create systems that can bypass this kind of protection<sup>74</sup>. Some of the rights management functions of computer systems could include tracking, identifying, and authenticating users, providing the copyright status of each digital object and limiting its use or charges, handling user transactions by only allowing access to not so many copies, or charging for copies, or transmitting requests to publishers.

Digital libraries are increasingly serving a worldwide audience. Persons of different cultural backgrounds can hold diverse perceptions of what constitutes an effective, efficient and satisfying information-seeking experience, and digital library design therefore grows more complex when its user population traverses cultural boundaries<sup>cxxxiv</sup>.

This paper reviews the state of research on cross-cultural digital library usability and identifies reasons for lack of progress in the field. An improved framework is proposed to

support the discussion and evaluation of subjective cultural factors in a deeper, more systematic fashion. The cognitive theory of Howard Gardner, multiple intelligences theory, is explored as one potential framework for exploring cross-cultural digital library usability.

## **2.2 Theoretical Framework**

This study is based on two theories namely the Stimulus Theoretical Framework and the DeLeon and MacLean Information Success Model. The Stimulus Theoretical Framework is used to measure the dependent variable which is motivation to use open-source software while the Technology, Organization, and Environmental Framework (TOE) is used to measure the independent variables; organization factors and environmental factors.

### **2.2.1 Stimulus Theoretical Framework**

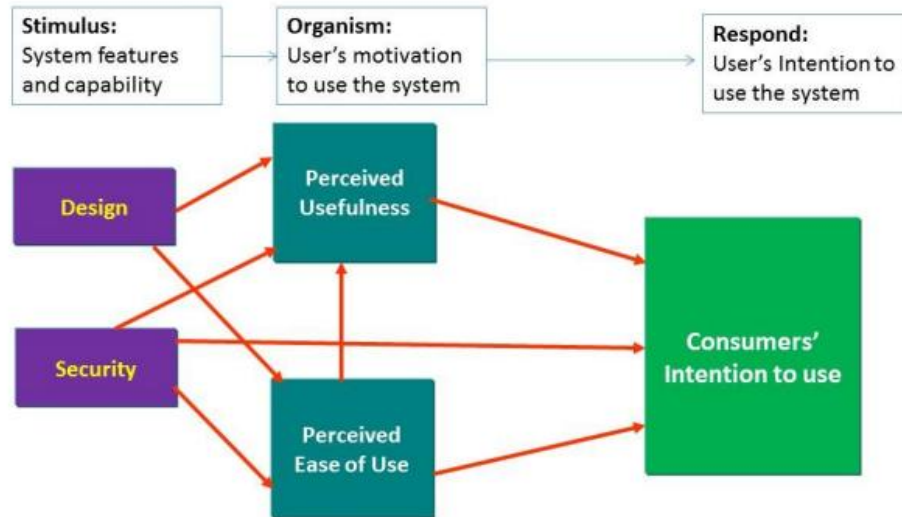
The Stimulus Theoretical Framework was developed by PC Lai in 2017<sup>cxxxv</sup>. Holistically, the framework posits that the design and security of a technology are the stimulus that represent the system and the features capabilities while, the perceived ease of use and perceived usefulness are the organism that represents the motivation to use the system which leads to consumers' response to use the system. The framework was developed after a critical review of existing models and theories of technology adoption such as the Theory of Diffusion of Innovations (DIT) (Rogers, 1995), the Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), Decomposed Theory of Planned Behaviour, (Taylor and Todd, 1995), the Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw, 1989, Technology

Acceptance Model 2 (TAM2) Venkatesh and Davis (2000) and Technology Acceptance Model 3 (TAM3).

The Stimulus Theoretical Framework (figure 2.1) provides the structure for the dependent variable of this study which is motivation to use open-source software. The TAM has already validated the predicting power of ease of use and perceived usefulness in the acceptance and use of new technology by various categories of users. The stimulus framework suggests that both factors can now be seen as motivators for the use of technology. In the context of this study, the ease that the use of open-source software brings into the performance of library routines is expected to motivate library personnel to make use of available open-source software. On the other hand, when library personnel have a perception that open-source software is difficult to use or that it will make their task more complex, they will not be motivated to make use of open-source software.

However, similar to perceived ease of use is the perceived usefulness; when library personnel are introduced to open-source software or when libraries adopt open-source software, it is the perception of its usefulness that will motivate them to use the software. In a situation where an introduced software is not useful for any library routine, such software will not be used. Some also believe that library personnel may overlook perceived ease of use when they perceived a new software as very useful in their work. This means that perceived usefulness may be a stronger motivator to use open-source software than perceived ease of use.

The Stimulus Theoretical Framework has not been used widely in empirical studies because it is recently introduced. In addition, the author has not conducted an empirical validation of the framework. Nevertheless, the framework is innovative and seems promising as technology adoption model.



**Figure 2.1: Stimulus Theoretical Framework<sup>172</sup>**

### 2.2.2 The DeLone and McLean IS Success Model

The DeLone and McLean Information Systems (IS) Success Model, first proposed in 1992 and later refined in 2003, is a widely recognized framework used to evaluate the success of information systems. It integrates multiple dimensions of system performance, providing a comprehensive approach to assessing the effectiveness of information systems like digital libraries. The model is particularly useful for evaluating how well a system supports users and meets organizational goals. It includes six key dimensions of IS success: namely, system quality, information quality, service quality, system use/use intentions: user satisfaction and net benefits<sup>exxxvi</sup>.

System Quality refers to the technical performance of an information system, including its reliability, ease of use, and functionality. High system quality ensures that users can access the system smoothly and that it performs tasks as expected without errors or interruptions. Information quality addresses the accuracy, relevance, completeness, and timeliness of the information provided by the system. It measures how useful and valuable the information is to the user, which is crucial for decision-making processes<sup>xxxxvii</sup>.

Another dimension is technical support which focuses on the support and services provided to users of the information system, such as responsiveness, technical support, and user assistance. High service quality ensures users can resolve issues quickly and receive support in using the system. This can lead to System Use/Use Intentions which captures the extent to which users interact with the system, either by actually using it (system use) or having the intention to use it in the future (use intentions). Frequent and voluntary use indicates a system that meets user needs and is well-integrated into their workflows.

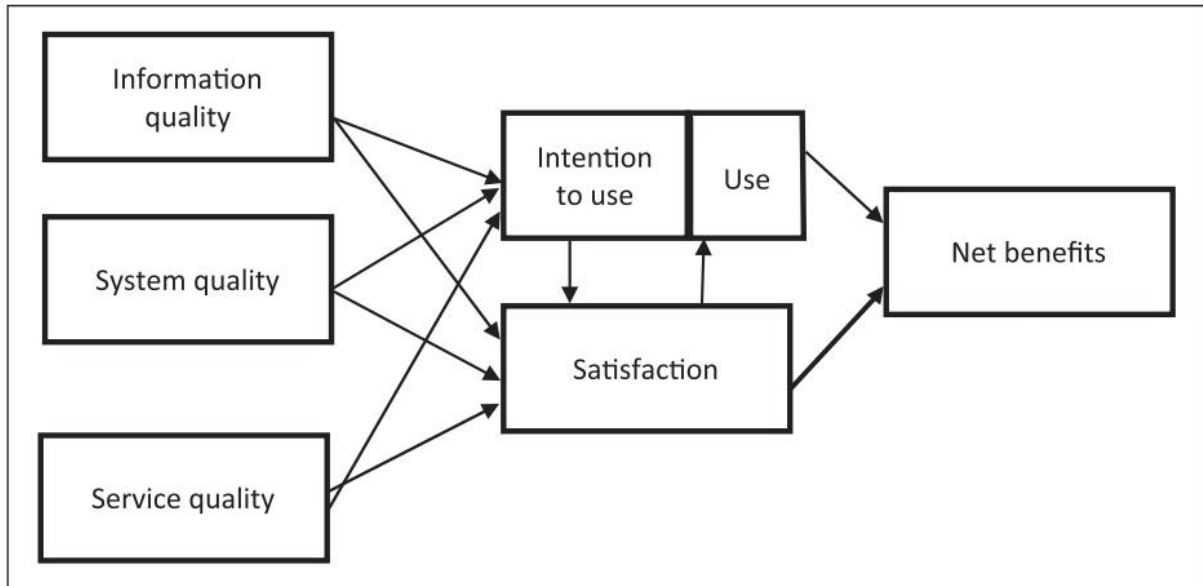
User Satisfaction measures users' overall satisfaction with the system, reflecting their experiences and perceptions of the system's effectiveness and value. High user satisfaction suggests that the system meets or exceeds user expectations. This final dimension is called net benefits. This dimension assesses the overall impact of the information system on users, the organization, and other stakeholders. It considers both the positive and negative outcomes of system use, such as improved productivity, decision-making, or potential drawbacks like increased costs<sup>xxxxviii</sup>.

The DeLone and McLean model suggests that the success of an information system is the result of interactions among these six dimensions. For example, high System Quality and Information Quality can lead to increased Use and User Satisfaction, which in turn can produce Net Benefits for users and the organization. The model emphasizes that these dimensions are interrelated, meaning that changes in one area can affect the others. For example, if a digital library improves its Information Quality, users may find it more useful, leading to increased System Use, higher User Satisfaction, and ultimately greater Net Benefits such as enhanced research outputs<sup>173</sup>.

In the context of digital libraries, the DeLone and McLean model can be used to evaluate how well the library's systems serve the needs of its users, such as students, researchers, or faculty members. System Quality would include aspects like the ease of navigating the library's catalog and the speed of searching for resources. Information Quality would focus on the accuracy and relevance of the digital resources provided, such as academic journals or e-books. Service Quality might involve the effectiveness of the library's help desk or online tutorials. The success of a digital library can then be measured by the extent to which users engage with its resources (System Use), their satisfaction with the services provided (User Satisfaction), and the overall benefits that the digital library brings to their research or learning experiences (Net Benefits)<sup>174, cxxxix</sup>.

The DeLone and McLean IS Success Model is significant because it offers a structured way to evaluate the effectiveness of information systems from multiple perspectives. It helps managers and researchers identify strengths and weaknesses in digital systems, guiding improvements and ensuring that these systems continue to meet user needs and organizational objectives. By examining different success dimensions, the model

provides a holistic view of system performance, which is essential for making informed decisions about future investments in information systems.



**Figure 2.2 DeLeon and McLean Information System Success Model<sup>120</sup>**

## **2.3 Review of Empirical Studies**

### **2.3.1 Information Quality and Motivation to Use Digital Library Resources**

Information users approach information systems to obtain information, so it stands to reason that the quality of information obtained would be of some interest to them. To empirically confirm this, various studies have been conducted to evaluate the impact of information quality on the motivation of various categories of users to make use of digital information resources. Researchers in Pakistan conducted an exploratory study aimed at modelling the factors influencing the actual utilization of a digital library system. A research model was constructed utilizing Delone and McLean's information system success model and delineated as an empirical study. Data were gathered from 978 participants via a structured questionnaire across four distinct colleges in Malaysia.

The results indicated that the quality aspects of digital library systems significantly impact satisfaction, behavioural intention, and variability in actual usage. The quality of information is the most significant predictor of user happiness, which, in turn, profoundly influences students' intention to utilize the system. User satisfaction and behavioural intention to utilize the system exhibit a robust positive correlation with the actual usage of a digital library system. In summary, behavioural intentions are significantly affected by system quality, information quality, and service quality<sup>exl</sup>.

A related study conducted a confirmatory study to model and investigate the determinants of user satisfaction in a digital library system. A research model was derived from the established Delone and McLean Information System Success 2.0 framework. Data were gathered with a cluster sampling technique. A total of 353 valid questionnaires were utilized for the empirical study. The results indicated that Information Quality has the most significant impact on customer happiness, followed by System Quality and Service Quality as contributing variables. Furthermore, the Preacher and Hayes methodology was employed to assess the indirect effect. Partial mediation occurred in all effects from this method. The quality aspects and Information System significantly influence behavioral intentions<sup>exli</sup>.

Digital libraries are not merely a collection of information resources but have evolved into a digital community for communication, exploration, and electronic learning. The economic investment in developing effective digital library (DL) systems necessitates substantial usage of financial, temporal, energetic, and human resources. In line with this, a study examine the factors influencing the utilization of digital libraries, which may result in user satisfaction and increased engagement with information systems such as

digital libraries. Nonetheless, these characteristics may operate variably across distinct cultures. In light of this reality, DeLone and McLean's Information Systems Success Model (ISSM) is evaluated and augmented within a local academic framework.

A total of 355 responses were obtained by a questionnaire-based survey, adhering to the quantitative research design. The population studied in this study comprised research academics from the University of Punjab, Lahore, Pakistan. A two-stage stratified random sampling technique was employed to choose the sample. Structural equation modeling is employed to ascertain the nature and magnitude of the relationships among the examined variables. The results indicate that information quality is a significant predictor of DL system utilization<sup>cxlii</sup>.

Furthermore, a research work systematically evaluates, compiles, analyzes, and synthesizes research on the D&M model within the e-learning context. This review employs both automated and human search techniques to gather pertinent studies from 2010 to 2020. Ninety-two primary studies were identified following the application of inclusion and exclusion criteria. The results indicate that the majority of the examined research were performed within the education sector. The success category was the most extensively examined area among the evaluated studies. The majority of studies formulated a hybrid or extended model. This study discovered gaps in the literature and offers seven prospective areas for future investigation, including studies to assess the net benefits at the organizational level of analysis<sup>121</sup>.

Another study empirically examines the predictive influence of digital literacy on e-government performance in Nigeria using the public value framework. Research has

elevated public value to assess governmental actions from the citizens' viewpoint. Employing an augmented Delone and McLean information system success model, predicated on the notion that citizens possessing elevated digital literacy will effectively utilize e-government services, hence resulting in enhanced satisfaction and superior e-government performance. The literature on the predictive role of digital literacies on e-government performance is limited. The research introduced a conceptual framework grounded in 12 hypotheses, which were evaluated via PLS-SEM. Data were gathered using a standardized questionnaire administered to e-government users in Nigeria. This study's principal finding is that digital literacy significantly influences the utilization of e-government, user happiness, and the net advantages derived from e-government. The ramifications of the findings were examined<sup>cxliii</sup>.

In Nigeria, researchers also deployed the modified DeLone and McLean Information Systems Success (D&M ISS) model to identify the success elements influencing the acceptance of the e-learning system Canvas among students at a Nigerian university. The research was founded on the assertion that system quality (SQ), service quality (ServQ), and information quality (IQ) are key factors influencing the behavioral intention to utilize Canvas and user satisfaction with Canvas, all of which subsequently affect the actual utilization of Canvas. Data from 366 students were examined using AMOS 22 through structural equation modeling (SEM) to evaluate the correlations among the constructs of the proposed model. The findings somewhat corroborated the influence of quality antecedents on students' behavioural intention and user happiness. There was comprehensive support for the correlation between behavioural intention and student satisfaction over their actual utilization of Canvas. The study seeks to contribute to the

development of strategies and approaches to improve the adoption of eLearning systems in developing nations, particularly Nigeria<sup>exliv</sup>.

Another study conducted in Turkey sought to assess the efficacy of the Student Information System (SIS) utilizing the revised Information System Success Model (IS success model) put out by Delone and McLean. Survey data were gathered from 882 students utilizing SIS at a state institution in Turkey. Structural Equation Modeling study was conducted using R to evaluate the acquired data. The empirical results indicate that system quality, information quality, and service quality significantly influenced usage. Nonetheless, system quality, information quality, and service quality did not have a substantial impact on user satisfaction. Moreover, both system utilization and user satisfaction exert no substantial influence on the effectiveness of SIS. Consequently, higher education institutions should assess the performance of current SISs to enhance their utilization and improve student satisfaction<sup>exlv</sup>.

In Indonesia, a study seeks to predict the determinants influencing system utilization, user satisfaction, net benefits, and user loyalty towards digital library services. We constructed the proposed framework utilizing Delone and McLean's information system success model. A survey tool was modified, validated, and evaluated for reliability. The survey data were collected from 2,105 respondents who are students of the Indonesian Open University (IOU). We assessed the validity and reliability of the data by evaluating the measurement model. We employed a structural model within the Partial Least Squares Structural Equation Modeling (PLS-SEM) framework to present the path coefficient ( $\beta$ ), p-value, and t-value for the primary data analysis. The findings indicate that all hypotheses were validated. Service quality was the primary determinant of user happiness,

which in turn was the foremost predictor of usage. The net benefits variable was primarily influenced by usage. The primary factor influencing user loyalty was net benefits. This research delineates quality standards that might serve as a benchmark for relevant stakeholders to enhance digital library services, user happiness, use, net benefits, and user loyalty<sup>exlvi</sup>.

A related study examines the impact of the Unified Theory of Acceptance and Use of Technology (UTAUT) and the DeLone and McLean Information System Success Model on several aspects of system utilization in digital library systems. These aspects encompass lean metrics and comprehensive metrics of system utilization. The study transcends the broad characterization of some constructs, such as facilitating conditions and quality, and evaluates the impact of sub-constructs on many aspects of system utilization, including both smart and traditional facilitating conditions. Data were gathered via a cross-sectional survey conducted at three universities. Software for component-based structural equation modeling was employed to examine the data and evaluate the research model. The results demonstrate both variability and uniformity in the factors that affect the dimensions of system utilization. The lean measure was forecasted by performance expectancy, traditional facilitating conditions, system quality, and behavioural intention, whereas the rich measure, specifically deep structure use, was affected by performance expectancy, effort expectancy, traditional facilitating conditions, system quality, and behavioural intention. Cognitive absorption, a comprehensive metric, was influenced by performance expectancy, service quality, system quality, and intention<sup>exlvii</sup>.

Digital libraries exhibit complexity, which necessitates the examination of user success through suitable user success models. These models encompass the elements that influence the interactions of individuals, technology, and organizations. This study aimed to delineate and analyze an integrated digital library user success (IDLUS) model within the framework of digital library environments, specifically the Higher Education Commission National Digital Library (HEC-NDL) of Pakistan, by adopting and repurposing established digital library and web success models.

The stratified random sampling technique was employed to choose the sample from the University of the Punjab, a prestigious public sector university in Pakistan. Participants were requested to complete a modified survey questionnaire. A total of 355 completed and valid surveys were acquired. Data evaluations utilizing confirmatory factor analysis and structural equation modelling yielded results that corroborated the proposed IDLUS model. The proposed IDLUS model was evaluated and validated using model fit statistics within the academic computing framework of the HEC-NDL in Pakistan. The findings validated the correlations among the latent variables posited in the model<sup>[xlvi]</sup>.

### **2.3.2 System Quality and Motivation to Use Digital Library Resources**

Digital libraries are information systems with (mostly) high quality information resources that can help produce the best academic works. Despite this, information users are often found to sidestep digital library resources in favour of resources of sources whose provenance is not guaranteed. In view of this anomaly, researcher have examined the role of digital library system quality in the motivation of various categories of users to make use of digital library resources.

Researchers assessed the effectiveness of OPAC implementation utilizing the Delone and McLean Model. Comprises seven variables: information quality, system quality, service quality, usage, user convenience, interest in utilization, and net benefits. The data collected in this study were derived from a questionnaire distribution via Google Forms and written formats, with a research sample including 40 respondents. The findings of this study present conditions for each variable inside the Delone and McLean Model. The user satisfaction and net benefit variables are categorized as high, whilst the information quality and system quality factors are classified as pretty high. The results indicate that it is essential to prioritize enhancements to the indicators associated with the Delone and McLean Model variables that exhibit an average percentage below the overall average percentage of all indicators<sup>cxlix</sup>.

A related also investigated factors determining the use of information systems inside the Village Financial System to promote a sustainable information society (SIS). The models encompass the DeLone and McLean model and trust theory, comprising eight variables: system information quality, information quality, service quality, trust in government institutions, trust in technology, utilization, user happiness, net benefits, and a sustainable information society. A survey questionnaire was administered, and data was gathered from SISKEUDES users in Bali, Indonesia, which were statistically analyzed using Partial Least Squares (PLS) to comprehend the phenomena of Information System (IS) adoption and sustainable information society. The research findings indicate that system information quality, information quality, and trust in technology significantly influence usage and user happiness, whereas service quality and trust in government institutions do not exert a similar effect. The variables of usage and user satisfaction significantly

influence net benefits and the sustainability of the SIS. The conclusions of this study can offer e-government practitioners enhanced understanding of how to address issues related to user happiness and augment faith in compulsory e-government services, hence facilitating the realization of SIS and the "smart village<sup>cl</sup>."

### **2.3.3 Information Quality, System Quality and Motivation to Use Digital Library Resources**

This research seeks to enhance the comprehension of information system success aspects as a pivotal component influencing banking success. This study experimentally examined the evaluations of Information Systems success within the banking sector of Saudi Arabia. The information systems success model by DeLone and McLean will be utilized to evaluate IS success within the banking sector. The research will employ a survey instrument to gather data for testing the linkages depicted in the research model. The study sample comprised employees from the banking sector in the Kingdom of Saudi Arabia. Only 145 questionnaires were utilized for analysis, representing 38% of the total respondents. The research utilized measuring items from pertinent studies on IS success. Various data analysis methodologies will be employed to validate the IS-Success model.

The study's findings empirically substantiate the positive correlation among the dimensions of the IS success model. The study found that the dimensions of information systems (information system quality, system quality, and service quality) significantly enhance customer satisfaction and motivation to use digital library resources. However, it was found that only information quality significantly positively influences the intention to

use, but system quality and service quality do not have a significant impact. Both usage and desire to use exert a strong beneficial impact on user happiness. User happiness, usage, and intention to use exert a considerable positive impact on net benefit<sup>cli</sup>.

In a related study, scholars conducted an evaluation of enterprise information systems (EIS) success within an organizational framework. Adopting the DeLone and McLean success model and employing a quantitative methodology, survey results were gathered via questionnaires. questions were disseminated to 250 senior IT executives utilizing EIS, resulting in 134 valid questions that were empirically analyzed using the Smart-PLS method. The investigation results demonstrate that the quality of information and systems positively influenced user happiness and individual impact. User satisfaction positively influenced individual impact, which ultimately resulted in organizational effect. The findings indicated that the employed model possesses satisfactory convergent and discriminant validities, together with adequate reliability<sup>clii</sup>. The results can assist managers and practitioners in comprehensively understanding the determinants of EIS success within Jordanian listed companies.

It seems that information quality and service quality are essential qualities, not just for digital libraries, but for all information systems. Researchers from Asia conducted a study to validate an integrated model of e-filing continuance usage. The model has its theoretical basis in the expectancy confirmation theory and the DeLone and McLean's IS Success model. The model is extended to include two additional constructs relevant to e-filing continuance usage: perceived risks and habit. The model is tested using data collected from a sample of 645 e-filing users in Mauritius. Structural equation modeling was used to test the hypotheses. Findings suggest that citizens' continuance usage

intention of e-filing is influenced by system quality, user satisfaction and habit. User satisfaction had the strongest impact on e-filing continuance usage intention. This study makes a valuable contribution to knowledge through the extension and validation of the ECM and IS Success model to explore salient factors affecting e-filing continuance usage intention<sup>cliii</sup>.

This study investigated the impact of service quality parameters during COVID-19 on individuals' intention to persist in utilizing mHealth services. The decision-making trial and evaluation laboratory (DEMATEL) method was employed to detect and analyze the correlations between service quality and individuals' desire to persist in using mHealth during the COVID-19 pandemic. The direct, indirect, and interdependent behaviors of individuals concerning service quality and the continued use of mHealth were examined. This survey involved 126 respondents. The findings revealed multiple correlations between service quality elements and individuals' ongoing utilization of mHealth. The primary element influencing users' persistent engagement with mHealth was assurance, succeeded by hedonic advantages, efficiency, reliability, and content quality. The pertinent cause-and-effect links were discerned, and the trajectory for quality enhancement was deliberated. The findings from this study can assist healthcare policymakers in promptly and effectively addressing COVID-19 problems<sup>cliv</sup>.

In a related study in which both information and system quality were among the variables, researchers investigate the factors influencing user satisfaction and the level of user satisfaction with the online ticket application. This study employs the End User Computing Satisfaction (EUCS) model's development framework, incorporating three DeLone and McLean variables—system quality, information quality, and service

quality—alongside five EUCS model variables: content, accuracy, format, timeliness, and ease of use. The study population consists of regular users of Android-based online ticketing software. The research sample was derived from a total of 175 respondents by the purposive sampling technique. The PLS-SEM methodology was employed for data analysis utilizing SmartPLS software. The findings indicated that users expressed satisfaction with the online ticket application, with two out of eight hypotheses rejected and six approved. The elements influencing user satisfaction in online ticket applications include accuracy, convenience of use, timeliness, system quality, information quality, and service quality<sup>clv</sup>.

Furthermore, researchers examined the factors that influence the utilization of food service applications and to enhance their effectiveness for optimal advantages. This study's quantitative methodology employs three factors from the Delone & McLean IS Success paradigm and the UTAUT measurement paradigm. The study's population consists of users of food service applications on the island of Java. One hundred fifty individuals responded to the samples. Purposive sampling was employed to get samples. Data analysis employing SmartPLS version 4 and the PLS-SEM approach. Five of the seven criteria analyzed in the study of interest and usage behaviour were determined to be valid. The utilization of food service applications can enhance performance, facilitated by high-quality supporting facilities and systems, hence influencing user acceptability of the application. This research offers companies insights into the determinants affecting their application usage behaviour, aiming to enhance the adoption and utilization of food service applications<sup>140</sup>.

In another study that focused on the academic setting, researcher from Zimbabwe investigated the influence of perceived e-learning service quality on student satisfaction and loyalty in a developing nation. The expectation-confirmation theory informs the development of the conceptual framework. A causal study strategy rooted in the positivist research theory was employed. The research population consisted of students enrolled in both public and private universities in Zimbabwe. Data were gathered using a person-administered survey, resulting in a stratified sample of 354 students. Structural equation modeling (SEM) results indicated substantial positive correlations between perceived characteristics of e-learning service quality and student satisfaction in e-learning. Student satisfaction was found to have a favourable impact on student loyalty towards e-learning ( $P < 0.05$ ). Consequently, it was determined that system quality, information quality, and service quality strongly impact student happiness and loyalty in e-learning. The study consequently advised that the higher education sector should develop e-learning platforms that facilitate accessibility, navigation, and user adaptability<sup>clvi</sup>.

The Metaverse is an immersive virtual realm in which humans engage with one another through avatars. The Metaverse is anticipated to provide several opportunities across various sectors. The Metaverse fosters innovative interactions among individuals, such as learners; nevertheless, there is a lack of understanding on the factors that affect its acceptance and utilization in higher educational institutions, especially in developing nations. This article seeks to examine the elements influencing users' intentions regarding Metaverse technology for educational purposes in higher education institutions in Jordan<sup>clvii</sup>.

A study model was developed by integrating variables from the Unified Theory of Acceptance and Use of Technology (UTAUT) (performance expectancy, PE; effort expectancy, EE; social influence, SI; and facilitating conditions, FC) and the Information System Success (ISS) model (user satisfaction, SAT; system quality, SQ; service quality, SVQ; and information quality, IQ) alongside constructs of perceived curiosity (PC) and hedonic gratification (HG). Both PC and HG were incorporated as contextual parameters that may enhance the applicability of UTAUT and ISS across various technology usage scenarios. Data were collected from 441 university students in Jordan through an online questionnaire<sup>139</sup>.

The examination of the structural model indicated that users' behavioural intentions for Metaverse usage were highly influenced by user satisfaction (SAT), performance expectancy (PE), facilitating conditions (FC), and hedonic pleasure (HG). Furthermore, information quality (IQ) and service quality (SVQ) were found to significantly impact user satisfaction. The results demonstrated a substantial influence of systems quality (SQ), information quality (IQ), and service quality (SVQ) on performance evaluation (PE). Ultimately, a notable impact of PC on the EE factor was identified<sup>139</sup>.

Another study, this time in the medical sector, examines the determinants influencing telemedicine adoption by synthesizing the Unified Theory of Acceptance and Use of Technology, the Information System Success Model, and perceived security. The integrated model is assessed utilizing a hybrid structural equation modeling and artificial neural network technique, grounded in data obtained from 152 individuals. The findings indicated that performance anticipation, hedonic motivation, perceived security, and user happiness greatly influence telemedicine adoption. User happiness is significantly

influenced by the quality of information, system, and service. Nonetheless, effort expectancy, social influence, and favorable factors do not substantially affect telemedicine uptake. The ANN findings indicated that user pleasure is the paramount factor influencing telemedicine adoption, with a normalized relevance of 100%<sup>clviii</sup>.

## **2.4 Conceptual Model**

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## Independent Variables

## Dependent Variable

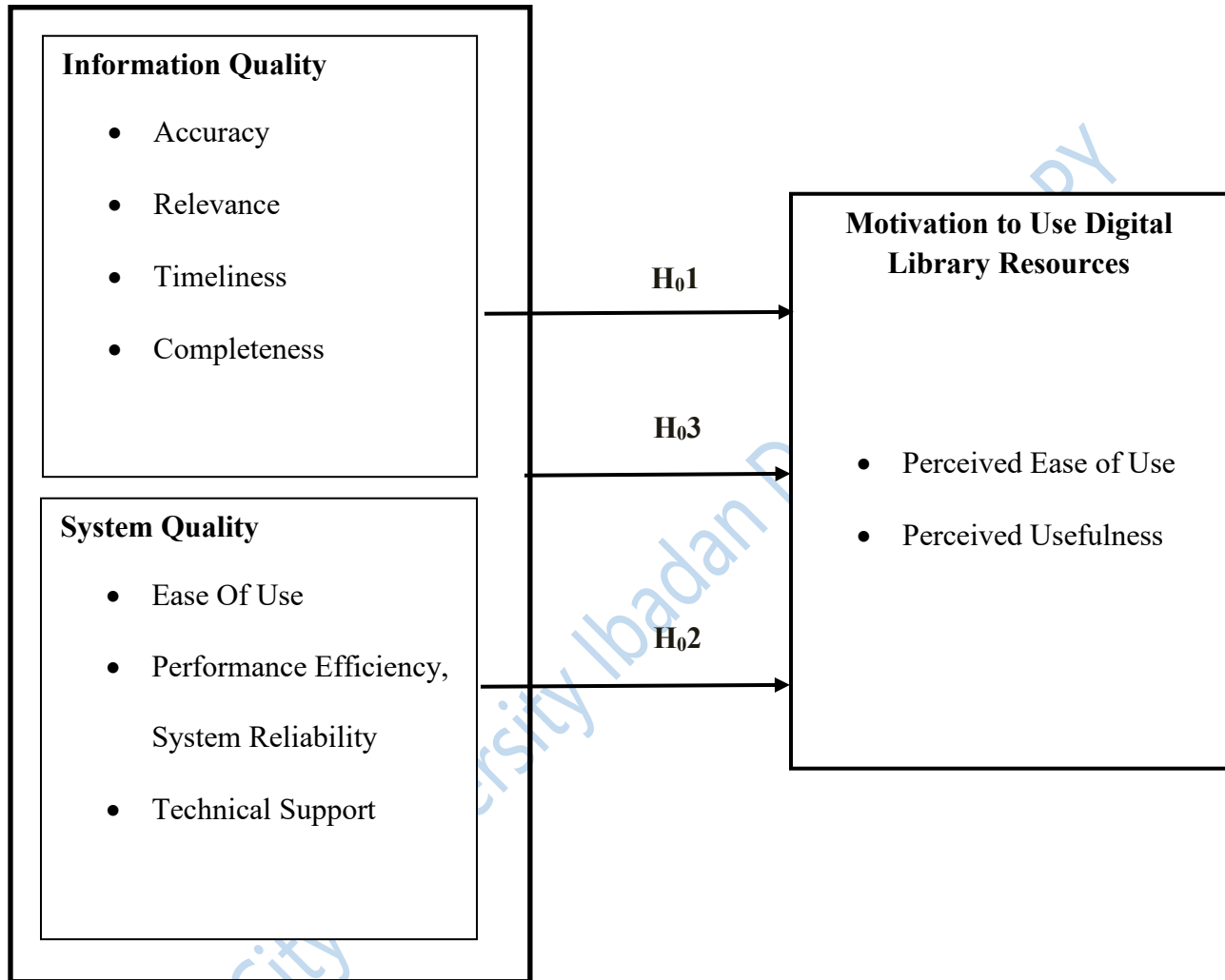


Figure 2.3: Conceptual Model on the influence of information quality and system quality in the motivation to use digital library resources among postgraduate students (Source: Researcher, 2024)

The conceptual model presented illustrates the relationships between Information Quality, System Quality, and Motivation to Use Digital Library Resources among postgraduate students. It examines how the attributes of the digital library's information and system

influence students' willingness to engage with the resources provided. Specifically, Information Quality encompasses factors like Accuracy, Relevance, Timeliness, and Completeness. Accuracy refers to the correctness and precision of the information, ensuring that users access reliable data. Relevance focuses on how applicable the information is to the users' needs, while timeliness emphasizes providing up-to-date content. Completeness ensures that the information meets user expectations comprehensively. The model posits ( $H_{01}$ ) that higher information quality will lead to increased motivation among students to use digital library resources, suggesting that when users find information precise, relevant, current, and comprehensive, they are more likely to utilize these resources.

System Quality addresses the characteristics of the digital library platform itself, including Ease of Use, Performance Efficiency, System Reliability, and Technical Support. Ease of use measures how user-friendly the system is, which directly impacts user interaction. Performance efficiency relates to the system's speed and responsiveness when processing user requests. System reliability ensures that the platform functions consistently without disruptions, while technical support refers to the availability of assistance to resolve any issues users encounter. The model proposes ( $H_{02}$ ) that higher system quality positively impacts users' motivation to engage with digital library resources. Essentially, a digital library that is intuitive, efficient, reliable, and well-supported encourages more consistent use by postgraduate students.

Finally, the model explores Motivation to Use Digital Library Resources, which is influenced by users' Perceived Ease of Use and Perceived Usefulness. Perceived ease of use is the extent to which users believe that using the digital library will be effortless,

while perceived usefulness is the belief that these resources will enhance academic performance.  $H_{03}$  suggests that both information quality and system quality jointly influence this motivation, indicating that a digital library offering high-quality, relevant information through a user-friendly and reliable system will be seen as beneficial and easy to use. This, in turn, drives students' motivation to engage with the digital library, making the resources an integral part of their academic pursuits.

## **2.5 Summary of Gaps in Literature Reviewed**

Firstly, research on postgraduate students' perceptions of information quality within digital libraries is limited. While digital libraries are essential for academic support, few studies explore the specific attributes of information quality—such as accuracy, relevance, credibility, and timeliness—in the context of Nigerian private universities. Most existing literature tends to focus on general user satisfaction rather than evaluating how these dimensions of information quality directly influence the academic work and resource reliability for postgraduate students. Therefore, there is a need for detailed studies on how high-quality information in digital libraries impacts academic success, particularly in the private university context.

In addition, studies exploring system quality are relatively rare, especially regarding its specific components such as ease of use, performance efficiency, system reliability, and technical support within private university digital libraries. Research often mentions system challenges in passing but rarely investigates the influence of these system quality factors on students' motivation or the ease of academic work. Private university environments may present unique challenges in terms of infrastructure and user support,

and exploring these aspects would provide valuable insights into optimizing system quality to enhance resource accessibility and functionality for students.

Furthermore, there is limited understanding of the motivational factors that encourage postgraduate students to use digital library resources, and studies often fail to capture how information and system quality contribute to their usage patterns. While some studies look at general factors affecting digital library use, they do not often address the specific motivations for postgraduate students, who tend to have more rigorous academic needs and may rely more on the digital library's quality. Insights into what drives these students to consistently use digital libraries and how motivation relates to system quality could reveal key areas for improvement.

Another notable gap exists in the regional focus of digital library studies. Much of the research on digital library resources in Nigeria either takes a broad approach across all universities or concentrates on public institutions, leaving private universities in Southwest Nigeria underrepresented. Considering that private institutions may face distinct infrastructural and resource access challenges compared to public institutions, there is a pressing need to understand how these unique constraints affect both information and system quality, as well as students' motivation to use these resources in the private university setting.

Finally, there is a lack of studies examining the impact of information and system quality on academic outcomes. While user satisfaction is often explored, few studies focus on the direct correlation between improved information/system quality and postgraduate students' academic performance. This gap suggests the need for research that links digital

library resource quality to actual learning outcomes and academic achievements, especially for postgraduate students who rely on high-quality, reliable information for their research and academic success. Addressing this area could help illustrate how improvements in digital library quality can directly support the academic and research excellence of postgraduate students. Filling these literature gaps would provide a deeper understanding of digital library resource use among postgraduate students in private universities in Nigeria, focusing on factors critical to enhancing resource quality, usability, and support in higher education.

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## **Chapter Three**

### **Methodology**

this chapter details the methodology that was used to conduct the study under the following headings, research design, study population, sampling size and techniques, data sources, research instruments, instrument validity and reliability, data collection procedure, and method of data analysis.

#### **3.1 Research Design**

Research design refers to the overall strategy utilized to carry out research that defines a succinct and logical plan to tackle established research question through the collection, interpretation, analysis, and discussion of data<sup>clix</sup>. This study adopted the descriptive survey research design of the cross-sectional was adopted in the study. Descriptive research of the cross-section type is considered appropriate because it focuses on the perception of exiting situation, describes and interprets what is concerned with the issues, conditions, practices or relationship that exist within views, belief and attitudes that are held, processes that are going on.

#### **3.2 Population of the Study**

The study population include postgraduates from private universities in Oyo State. Currently, there are seven (7) private universities in Oyo State. They include Ajayi Crowther University, Oyo, Lead City University, Ibadan, Kola Daisi University Ibadan, Dominion University Ibadan, Precious Cornerstone University, Oyo, and Atiba University Oyo.

The population of the study, therefore, consists of 1,789 postgraduate students from Dominion University, Ibadan and Ajayi Crowther University, Oyo. The breakdown of the population is provided in Table 3.1

**Table 3.1 Population of the Study**

<b>Institution</b>	<b>Population (PG)</b>
Ajayi Crowther University, Oyo	1,443
Dominion University, Ibadan	346
<b>Total</b>	<b>789</b>

Sources: clx, clxi

### **3.3 Sample and Sampling Techniques**

The sample size for the study is 317 postgraduate students. This is gotten from the sample size table developed by Krejcie and Morgan (Figure 3.1).

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size  
"S" is sample size.

Source: Krejcie & Morgan, 1970

From the table, it can be seen that the appropriate sample size for the current study is minimum of 317. Having determined the sample size which represents about 20% of the total population, proportionate sampling technique was then used to select the same percentage from each institution to ensure that the sample drawn is proportionate to the population of each institution. This has led to a sample of 357 (Table 3.2) which is considered adequate.

**Table 3.2 Breakdown of the Study Sample**

Institution	Population (PG)	Sample (20%)
Ajayi Crowther University, Oyo	1,443	288
Dominion University, Ibadan	346	69
<b>Total</b>	<b>1,789</b>	<b>357</b>

### 3.4 Instruments for Data Collection

The main instrument that was used for the study is a questionnaire titled Questionnaire on Information Quality, System Quality and Use of Digital Library Resources by Postgraduate Students (QIQSQUDL). The questionnaire is organised under four sections (A-D) to cater for the demographic data and variables in the study. The Instrument was adapted from various studies relating to the subject of the research.

Section A: Demographic Data. This section focuses on various demographic information such as Age, Gender, Levels of Postgraduate Studies, and Institution of the respondents. This section was developed by the researcher.

Section B: Motivation to Use Digital Library Resources. The section is adapted from a related study based on an existing model<sup>clxii</sup>. The section is divided into two subsections namely; perceived ease of use and perceived usefulness. The section contains 16 items in total. All of these items were measured on a 4-point Lickert scale of 4= Strongly Agree (SA), 3= Agree (A), 2= Disagree (D) and 1= Strongly Disagree (SD). Examples of statements are, “The digital library includes recent journals, articles, and books in my field of study”, “I find the resources in the digital library to be credible and trustworthy”.

Section C: Information quality scale. This section examines the perception of respondents about the quality of information they obtained from digital libraries in private universities in Oyo State. The section was adapted from a study based on the information system success model<sup>clxiii</sup>. The section is divided into four subsections of four items each making 16 items in total. All of these items were measured on a 4-point Lickert scale of 4=

Strongly Agree (SA), 3= Agree (A), 2= Disagree (D) and 1= Strongly Disagree (SD). Examples of statements are, “The digital library system is easy to navigate”, “I can easily access help or support when I encounter technical issues with the digital library.”.

Section D: System quality scale. This section examines the perception of respondents about the system quality of digital libraries in private universities in Oyo State. The section was adapted from a study based on the information system success model<sup>3</sup>. The section has 16 items in total. All of these items were measured on a 4-point Lickert scale of 4= Strongly Agree (SA), 3= Agree (A), 2= Disagree (D) and 1= Strongly Disagree (SD). Examples of statements are, “The digital library system is easy to navigate”, “I can easily access help or support when I encounter technical issues with the digital library”.

### **3.5 Validity of the Research Instrument**

Validity explains how well the collected data covers the actual area of investigation. Validity basically means “measure what is intended to be measured”. In order to ensure face and content validity, the adapted measuring instrument was given to the supervisor and other lecturers in the department of Information Management of Lead City University and the Library and Information Studies, University of Ibadan who checked to ensure accuracy and precision of the instrument. Based on the criticisms and corrections of the experts, the instrument was modified to achieve the best research objectives

### **3.6 Reliability of the Research Instrument**

Reliability means the ability of a research instrument to be consistent in returning the same results when administered to a population similar in nature. The draft of the questionnaire was pre-tested on 30 students from Fountain University, Osogbo, Osun

State, Nigeria who were not part of the study sample size but share similar characteristics with the population of the study. To test the reliability of the questionnaire, the Cronbach Alpha reliability method was used at 0.05 level of significance. The reliability test result shows the following values; Digital Library Resources Use 0.72; Information Quality Scale 0.82. and System Quality Scale 0.71. The whole instrument has a Cronbach Alpha value of 0.78. These Cronbach alpha values are within the range accepted for reliability of research instruments.

### **3.7 Administration of the Instrument and Method of Data Collection**

A letter of introduction was collected from the department of Information Management, Lead City University, Ibadan to introduce the researcher as Master students and to facilitate the collection of quantitative data from the respondents. The questionnaire was distributed by the researcher within a span of two weeks.

### **3.8 Methods of Data Analysis**

Data analysis is the process of evaluating data using the logical and analytical reasoning to carefully examine each component of the data collected or provided<sup>elxiv</sup>. The data collected was analysed using both descriptive and inferential analysis. The descriptive analysis comprising frequencies, percentages and mean scores, was adopted for the analysis of the demographic data and the research questions. In addition to this, inferential statistics comprising regression analysis was used for the hypotheses. The first and second hypothesis were analysed using simple regression while the third hypothesis was analysed using multiple regression analysis. All hypotheses were tested at 0.05 level of significance.

## Endnotes

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<sup>clx</sup> *Students' population*, Postgraduate School, Ajayi Crowther University, Oyo, 2024

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## Chapter Four

### Results and Discussion of Findings

This chapter presents the results of the obtained in the course of the study. Quantitative data were gathered to answer the research questions and test the hypotheses formulated for the study. The descriptive statistics is used to answer the research questions and the decision rule is that all items with mean score equal to or greater than 2.5 is accepted as significant while all items with mean less than 2.5 is considered not significant and rejected.

#### 4.1 Questionnaire Return Rate

**Table 4.1: Questionnaire Return Rate**

<b>Institution</b>	<b>Administered</b>	<b>Returned</b>	<b>Percent</b>
1 Ajayi Crowther University, Oyo	288	174	62
2 Dominion University, Ibadan	69	38	55
<b>Total</b>	<b>357</b>	<b>212</b>	

**Source: Field survey, 2024**

Table 4.1 presents data showing the return rate of the questionnaire administered on the respondents selected from the two Universities, that is, Ajayi Crowther University, Oyo and Dominion University, Ibadan. A total of three hundred and twelve (312) copies of the questionnaire was administered. However, two hundred and 12 (212) copies of the questionnaire were retrieved and included in the analysis. This translates to a 60% response rate.

#### 4.1 Demographic Analysis

**Table 4.2: Demographic Analysis**

		Frequency	Percent
<b>Sex</b>	Male	107	50.5
	Female	105	49.5
	<b>Total</b>	212	100.0
<b>Age</b>	20-29	74	34.9
	30-39	70	33.0
	40-49	47	22.2
	50-59	12	5.7
	60+	9	4.2
	<b>Total</b>	<b>212</b>	<b>100.0</b>
	<b>Programme</b>	PGD	30
Masters		88	44.7
MPhil		71	20.3
PhD		511	24.0
Total		212	100.0

**Source: Fieldwork 2024**

The demographic analysis presented in Table 4.2 provides a breakdown of postgraduate respondents by sex, age, and program level. Out of the total respondents, 50.5% (107) are male, and 49.5% (105) are female, reflecting a near-equal distribution between genders. In term of age distribution, majority of respondents (34.9%) fall within the 20-29 age group, followed closely by those aged 30-39, who comprise 33.0%. Respondents aged 40-49 make up 22.2%, while those aged 50-59 account for only 5.7%, and the smallest age group is those aged 60 and above, comprising just 4.2%. This distribution indicates that younger adults, particularly those under 40, constitute the majority of the sample population.

Regarding programme enrolment, most respondents are Master's students, representing 44.7% of the sample. MPhil students make up 20.3%, while PhD candidates constitute 24.0%. The smallest group, Postgraduate Diploma (PGD) students, accounts for 14.2% of

the respondents. This suggests a higher concentration of respondents in research-intensive programs, with a substantial proportion at the Master's and PhD levels.

In summary, the demographic analysis shows a balanced representation by sex, with a predominant presence of younger respondents (under 40) and a notable proportion of participants in advanced academic programs (Master's and PhD). This distribution could influence perspectives and responses in further analyses related to postgraduate education and experiences.

### 4.3 Research Questions

**Research Question One: What is the level of motivation to use digital library resources among postgraduate students of private university students in Oyo State?**

**Table 4.3: Motivation to Use Digital Library Resources among Postgraduate Students of Private University Students in Oyo State**

<b>Perceived Usefulness of Digital Library Resources</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Mean</b>
Using digital library resources improves my academic performance.	48 (22.6%)	126 (59.4%)	23 (10.8%)	15 (7.1%)	2.98
Digital library resources are useful for completing my assignments and research.	97 (45.8%)	65 (30.7%)	45 (21.2%)	5 (2.4%)	3.20
Digital library resources enable me to access relevant academic materials quickly.	58 (27.4%)	94 (44.3%)	36 (17.0%)	24 (11.3%)	2.88
Using digital library resources enhances my productivity in my studies.	66 (31.1%)	103 (48.6%)	36 (17.0%)	7 (3.3%)	3.08
The resources available in the digital library meet my academic needs.	74 (34.9%)	98 (46.2%)	31 (14.6%)	9 (4.2%)	3.12
I rely on digital library resources for quality and reliable information.	75 (35.4%)	95 (44.8%)	38 (17.9%)	4 (1.9%)	3.14
Digital library resources are more convenient than traditional library resources.	52 (24.5%)	111 (52.4%)	42 (19.8%)	7 (3.3%)	2.98
Digital library resources help me to stay updated with recent research in my field.	68 (32.1%)	89 (42.0%)	30 (14.2%)	25 (11.8%)	2.94
<b>Weighted Mean</b>					<b>3.04</b>
<b>Perceived Ease of Use of Digital</b>	<b>Strongly</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly</b>	<b>Mean</b>

<b>Library Resources</b>	<b>Agree</b>		<b>Disagree</b>		
I find it easy to use the digital library resources.	67 (31.6%)	105 (49.5%)	24 (11.3%)	16 (7.5%)	3.05
The procedures for accessing digital library resources are clear and understandable.	52 (24.5%)	127 (59.9%)	29 (13.7%)	4 (1.9%)	3.07
It is easy to navigate through the digital library's search and retrieval system.	82 (38.7%)	94 (44.3%)	33 (15.6%)	3 (1.4%)	3.20
I can use the digital library resources without needing technical support.	51 (24.1%)	108 (50.9%)	42 (19.8%)	11 (5.2%)	2.94
Learning to operate the digital library system is easy for me.	70 (33.0%)	93 (43.9%)	30 (14.2%)	19 (9.0%)	3.01
The digital library system has a simple and clear interface.	55 (25.9%)	112 (52.8%)	42 (19.8%)	3 (1.4%)	3.03
I feel comfortable using the digital library resources for academic purposes.	74 (34.9%)	106 (50.0%)	32 (15.1%)	--	3.20
I can access digital library resources on different devices (e.g., laptop, smartphone) without difficulty.	73 (34.4%)	111 (52.4%)	24 (11.3%)	4 (1.9%)	3.19
<b>Weighted Mean</b>					<b>3.14</b>
<b>Grand Mean</b>					<b>3.09</b>

Source: Researcher's Fieldwork, 2024

The analysis of Table 4.3 reveals postgraduate students' motivation to use digital library resources, with insights into both the perceived usefulness and ease of use of these resources among private university students in Oyo State.

In terms of perceived usefulness, using digital library resources to improve academic performance is strongly agreed upon by 22.6% of respondents, with another 59.4% agreeing. However, a smaller proportion of 10.8% disagree, and 7.1% strongly disagree.

The mean score for this metric is 2.98, indicating moderate satisfaction with the resources' impact on performance. Regarding the usefulness of digital library resources for completing assignments and research, 45.8% strongly agree and 30.7% agree, while

21.2% disagree, and 2.4% strongly disagree. The mean score here is higher at 3.20, reflecting strong perceived value in supporting academic tasks. Similarly, accessing relevant academic materials quickly is positively perceived, with 27.4% strongly agreeing and 44.3% agreeing; however, 17.0% disagree, and 11.3% strongly disagree, resulting in a mean score of 2.88.

For enhancing productivity in studies, 31.1% of respondents strongly agree, and 48.6% agree, while 17.0% disagree, and a small proportion of 3.3% strongly disagree. This metric has a mean score of 3.08, showing a general belief, that digital resources boost productivity. On whether the digital library meets their academic needs, 34.9% strongly agree, and 46.2% agree, while 14.6% disagree, and 4.2% strongly disagree, leading to a mean score of 3.12. Students also largely rely on digital library resources for quality and reliable information, with 35.4% strongly agreeing and 44.8% agreeing. Still, 17.9% disagree, and 1.9% strongly disagree, resulting in a mean of 3.14.

When comparing the convenience of digital resources to traditional ones, 24.5% of respondents strongly agree, and 52.4% agree, while 19.8% disagree, and 3.3% strongly disagree. The mean score here is 2.98. Lastly, staying updated with recent research through digital libraries is strongly agreed upon by 32.1%, and agreed upon by 42.0%. Conversely, 14.2% disagree, and 11.8% strongly disagree, with a mean score of 2.94. Overall, the weighted mean score for perceived usefulness stands at 3.04, indicating that students generally find digital libraries valuable for academic purposes, though satisfaction varies across specific metrics.

The perceived ease of use begins with ease of use itself, where 31.6% of students strongly agree, and 49.5% agree that digital libraries are easy to use, while 11.3% disagree, and 7.5% strongly disagree. This results in a mean score of 3.05. Clarity of access procedures is also viewed positively, with 24.5% strongly agreeing, 59.9% agreeing, 13.7% disagreeing, and 1.9% strongly disagreeing, leading to a mean score of 3.07. On the ease of navigating the search and retrieval system, 38.7% of respondents strongly agree, and 44.3% agree, while 15.6% disagree, and 1.4% strongly disagree. This metric scores the highest in this dimension with a mean of 3.20.

For independent use without needing technical support, 24.1% strongly agree, and 50.9% agree, though 19.8% disagree, and 5.2% strongly disagree. The mean score is 2.94, indicating that some respondents still encounter technical challenges. Ease of learning to operate the system is affirmed by 33.0% strongly agreeing and 43.9% agreeing, while 14.2% disagree, and 9.0% strongly disagree, resulting in a mean score of 3.01. Similarly, having a simple and clear interface has 25.9% of respondents strongly agreeing and 52.8% agreeing, while 19.8% disagree, and 1.4% strongly disagree. This metric yields a mean score of 3.03.

When considering comfort in using digital resources for academic purposes, 34.9% strongly agree, and 50.0% agree, while 15.1% disagree, leading to a mean score of 3.20. Finally, accessibility across devices is strongly agreed upon by 34.4% of respondents, with 52.4% agreeing, 11.3% disagreeing, and 1.9% strongly disagreeing. This accessibility metric scores a mean of 3.19, highlighting flexibility in usage. The weighted mean score for ease of use is 3.14, demonstrating overall positive perceptions of the digital library's usability.

The grand mean of 3.09 reflects a generally favourable perception of digital library resources, particularly in ease of access and perceived academic support. These findings suggest that while students see digital library resources as beneficial, improvements in certain areas—such as accessibility without technical support and the ability to improve academic performance—could further enhance user satisfaction and motivation.

**Research Question Two: What is the perception of information quality of digital library resources among postgraduate students of private universities in Oyo State;**

**Table 4.4 Perception of Information Quality of Digital Library Resources among Postgraduate Students of Private Universities in Oyo State**

<b>Accuracy</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Mean</b>
The information provided by the digital library is accurate and error-free.	60 (28.3%)	108 (50.9%)	34 (16.0%)	10 (4.7%)	3.03
I find the resources in the digital library to be credible and trustworthy.	73 (34.4%)	118 (55.7%)	19 (9.0%)	02 (0.9%)	3.24
The digital library offers up-to-date and accurate information for my academic needs.	100 (47.2%)	64 (30.2%)	35 (16.5%)	13 (6.1%)	2.81
The digital library's search results consistently provide correct and relevant information.	65 (30.7%)	89 (42.0%)	53 (25.0%)	5 (2.4%)	1.99
<b>Weighted Mean</b>					<b>2.76</b>
<b>Relevance</b>					
The information I find in the digital library is relevant to my academic needs.	73 (34.4%)	93 (43.9%)	43 (20.3%)	3 (1.4%)	3.11
The digital library resources are tailored to the subjects I study.	63 (29.7%)	128 (60.4%)	18 (8.5%)	3 (1.4%)	3.18
I am satisfied with the relevance of search results provided by the digital library.	68 (32.1%)	84 (39.6%)	50 (23.6%)	10 (4.7%)	2.99
The digital library provides a wide range of relevant academic resources and materials.	75 (35.4%)	88 (41.5%)	43 (20.3%)	6 (2.8%)	3.09
<b>Weighted Mean</b>					<b>3.09</b>
<b>Completeness</b>					

The digital library provides comprehensive information on various academic topics.	82 (38.7%)	94 (44.3%)	33 (15.6%)	3 (1.4%)	3.20
I can find all the information I need for my assignments through the digital library.	51 (24.1%)	108 (50.9%)	42 (19.8%)	11 (5.2%)	2.94
The resources in the digital library cover the topics I search for in depth.	70 (33.0%)	93 (43.9%)	30 (14.2%)	19 (9.0%)	3.01
The digital library provides sufficient information to support my research activities.	88 (41.5%)	96 (45.3%)	23 (10.8%)	5 (2.4%)	3.26
<b>Weighted Mean</b>					<b>3.01</b>
<b>Timeliness</b>					
The digital library provides access to the most current academic research and publications.	56 (26.4%)	128 (60.4%)	24 (11.3%)	4 (1.9%)	3.11
The information available in the digital library is regularly updated.	48 (22.6%)	112 (52.8%)	45 (21.2%)	7 (3.3%)	2.95
The digital library includes recent journals, articles, and books in my field of study.	91 (42.9%)	93 (43.9%)	24 (11.3%)	4 (1.9%)	3.28
I am satisfied with the timeliness of the information provided by the digital library.	61 (28.8%)	103 (48.6%)	40 (18.9%)	8 (3.8%)	3.02
<b>Weighted Mean</b>					<b>3.09</b>
<b>Grand Mean</b>					<b>2.99</b>

Source: Researcher's Fieldwork, 2024

The analysis of Table 4.4 highlights postgraduate students' perceptions of the information quality of digital library resources, examining dimensions of accuracy, relevance, completeness, and timeliness among private university students in Oyo State.

In the accuracy dimension, 28.3% of respondents strongly agree and 50.9% agree that the information provided by the digital library is accurate and error-free, while 16.0% disagree and 4.7% strongly disagree, yielding a mean score of 3.03. Regarding the credibility and trustworthiness of resources, 34.4% of students strongly agree, and 55.7%

agree, with only 9.0% disagreeing and 0.9% strongly disagreeing. This metric has a mean score of 3.24, indicating high trust in the reliability of the resources. On whether the library offers up-to-date and accurate information, 47.2% strongly agree, 30.2% agree, while 16.5% disagree, and 6.1% strongly disagree, leading to a lower mean score of 2.81. The consistency in providing correct and relevant information was positively perceived by 30.7% of students who strongly agree and 42.0% who agree; however, a substantial 25.0% disagree, and 2.4% strongly disagree, resulting in a mean of 1.99. The weighted mean for accuracy stands at 2.76, suggesting that while students generally trust the accuracy, there is some variability in perceptions regarding the consistency and currency of information.

In terms of relevance, 34.4% of students strongly agree and 43.9% agree that the information found in the digital library is relevant to their academic needs, with 20.3% disagreeing and 1.4% strongly disagreeing, yielding a mean score of 3.11. Similarly, 29.7% of respondents strongly agree and 60.4% agree that the resources are tailored to their subjects, while only 8.5% disagree and 1.4% strongly disagree, leading to a mean of 3.18. Satisfaction with relevance of search results is expressed by 32.1% of respondents who strongly agree, 39.6% who agree, but 23.6% who disagree, and 4.7% who strongly disagree, with a mean score of 2.99. Finally, availability of a wide range of relevant resources is strongly agreed upon by 35.4% and agreed upon by 41.5%, while 20.3% disagree and 2.8% strongly disagree, resulting in a mean of 3.09. This dimension has a weighted mean of 3.09, reflecting that students are generally satisfied with the relevance of digital library resources for academic purposes.

The completeness of digital library resources receives high approval, with 38.7% of respondents strongly agreeing and 44.3% agreeing that the library provides comprehensive information on various academic topics, while 15.6% disagree and 1.4% strongly disagree, giving a mean score of 3.20. Regarding the ability to find all necessary information for assignments, 24.1% strongly agree, 50.9% agree, while 19.8% disagree, and 5.2% strongly disagree, resulting in a mean score of 2.94. On the depth of topic coverage, 33.0% of respondents strongly agree, and 43.9% agree, with 14.2% disagreeing and 9.0% strongly disagreeing, leading to a mean of 3.01. For sufficiency of information to support research, 41.5% strongly agree and 45.3% agree, while 10.8% disagree, and 2.4% strongly disagree, resulting in a mean score of 3.26. The completeness dimension has a weighted mean of 3.01, indicating that students generally find the digital library resources to be comprehensive and adequate for their academic needs.

In the timeliness dimension, 26.4% of respondents strongly agree and 60.4% agree that the digital library provides access to current academic research and publications, while 11.3% disagree and 1.9% strongly disagree, giving a mean score of 3.11. Satisfaction with the regular updating of information is lower, with 22.6% strongly agreeing and 52.8% agreeing, but 21.2% disagreeing, and 3.3% strongly disagreeing, leading to a mean score of 2.95. The inclusion of recent journals, articles, and books is affirmed by 42.9% strongly agreeing and 43.9% agreeing, while 11.3% disagree, and 1.9% strongly disagree, resulting in a mean score of 3.28. Lastly, overall satisfaction with the timeliness of information is noted by 28.8% who strongly agree and 48.6% who agree, while 18.9% disagree and 3.8% strongly disagree, leading to a mean of 3.02. The timeliness dimension

has a weighted mean of 3.09, showing that students appreciate the currentness of resources, though regular updating could improve perceptions.

The grand mean of 2.99 indicates a generally positive perception of information quality in digital library resources, though there is room for improvement in the consistency of accuracy and timeliness of updates. The findings suggest that the digital library meets students' academic needs effectively, with particularly high ratings in credibility and relevance, but improvements in regular updating and search consistency could further enhance student satisfaction.

**Research Question Three: What is the perception of system quality of digital library resources among postgraduate students of private universities in Oyo State;**

**Table 4.5 Perception of System Quality of Digital Library Resources among Postgraduate Students of Private Universities in Oyo State**

<b>Ease of Use</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Mean</b>
The digital library system is easy to navigate.	52 (24.5%)	101 (47.6%)	51 (24.1%)	8 (3.8%)	2.93
The interface of the digital library is user-friendly.	96 (45.3%)	87 (41.0%)	23 (10.8%)	6 (2.8%)	3.29
It is easy to find specific resources in the digital library.	55 (25.9%)	96 (45.3%)	47 (22.2%)	14 (6.6%)	2.91
The digital library has a simple and intuitive search function	72 (34.0%)	107 (50.5%)	20 (9.4%)	13 (6.1%)	3.12
<b>Weighted Mean</b>					3.06
<b>Performance Efficiency</b>					
The digital library system loads pages quickly.	68 (55.7%)	53 (43.4%)	--	1 (0.8%)	3.54
I can download digital resources (e.g., PDFs, e-books) without delays.	69 (56.6%)	46 (37.7%)	6 (4.9%)	1 (0.8%)	3.50
The digital library's search results are displayed in a timely manner.	68	38	14	2	3.41

	(55.7%)	(31.1%)	(11.5%)	(1.6%)	
The digital library performs well even during peak usage hours.	78	42	--	2	3.61
	(64%)	(34.4%)		(1.6%)	
<b>Weighted Mean</b>					<b>3.52</b>
<b>System Reliability</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Mean</b>
The digital library rarely experiences downtime.	66	42	8	1	3.48
	(56.4%)	(35.9%)	(6.8%)	(0.9%)	
I have not encountered technical errors when using the digital library.	51	51	14	6	3.20
	(41.8%)	(41.8%)	(11.5%)	(4.9%)	
The digital library system maintains consistent performance over time.	70	45	6	--	3.53
	(57.9%)	(37.2%)	(5.0%)		
The digital library is reliable for accessing academic resources whenever needed.	68	48	5	1	3.50
	(55.7%)	(39.3%)	(4.1%)	(0.8%)	
<b>Weighted Mean</b>					<b>3.42</b>
<b>Technical Support</b>					
I can easily access help or support when I encounter technical issues with the digital library.	46	62	13	1	3.25
	(37.7%)	(50.8%)	(10.7%)	(0.8%)	
The digital library provides adequate instructions or guides for troubleshooting.	68	46	8	--	3.49
	(55.7%)	(37.7%)	(6.6%)		
I am satisfied with the technical support provided for the digital library system.	68	47	7	--	3.50
	(55.7%)	(38.5%)	(5.7%)		
There is a clear process for reporting technical issues related to the digital library.	46	62	13	1	3.25
	(37.7%)	(50.8%)	(10.7%)	(0.8%)	
<b>Weighted Mean</b>					<b>3.37</b>
<b>Grand Mean</b>					<b>3.34</b>

Table 4.5 presents the results of data analysis on the respondents perception of system quality of digital library resources among postgraduate students in private universities in Oyo State. The study measure system quality of digital libraries with metrics such as ease of use, performance efficiency, system reliability, and technical support.

For ease of use, 24.5% of respondents strongly agree, and 47.6% agree that the digital library system is easy to navigate, while 24.1% disagree, and 3.8% strongly disagree, yielding a mean score of 2.93. Concerning the user-friendliness of the interface, a higher 45.3% strongly agree, and 41.0% agree, with 10.8% disagreeing, and 2.8% strongly disagreeing, resulting in a mean score of 3.29. The ease of locating specific resources was affirmed by 25.9% strongly agreeing and 45.3% agreeing; however, 22.2% disagree, and 6.6% strongly disagree, leading to a mean score of 2.91. Finally, 34.0% strongly agree and 50.5% agree that the search function is simple and intuitive, with 9.4% disagreeing and 6.1% strongly disagreeing, resulting in a mean of 3.12. This dimension's weighted mean is 3.06, indicating moderate satisfaction with the digital library's ease of use.

The results under the performance efficiency also show that a majority of the respondents are positive: 55.7% strongly agree, and 43.4% agree that the digital library loads pages quickly, with only 0.8% strongly disagreeing, resulting in a high mean score of 3.54. For downloading digital resources without delays, 56.6% strongly agree, and 37.7% agree, while 4.9% disagree, and 0.8% strongly disagree, resulting in a mean of 3.50. Concerning the timely display of search results, 55.7% strongly agree, and 31.1% agree, while 11.5% disagree, and 1.6% strongly disagree, leading to a mean score of 3.41. During peak usage hours, 64.0% strongly agree, and 34.4% agree that the library performs well, with only 1.6% strongly disagreeing, yielding the highest mean of 3.61 for this dimension. The overall weighted mean for performance efficiency is 3.52, demonstrating that the digital library is generally efficient and responsive.

System reliability is the third metric used for system quality of digital libraries in private universities. The results show that 56.4% strongly agree, and 35.9% agree that the library

rarely experiences downtime, with only 6.8% disagreeing and 0.9% strongly disagreeing, resulting in a mean score of 3.48. In terms of technical errors, 41.8% of respondents both strongly agree and agree that they have not encountered issues, while 11.5% disagree and 4.9% strongly disagree, leading to a mean score of 3.20. For consistent performance over time, 57.9% strongly agree and 37.2% agree, with only 5.0% disagreeing, yielding a mean of 3.53. Reliability for accessing academic resources is positively rated, with 55.7% strongly agreeing and 39.3% agreeing, while 4.1% disagree and 0.8% strongly disagree, giving a mean score of 3.50. The weighted mean for system reliability is 3.42, indicating a high level of confidence in the library's stability and dependability.

Furthermore, the results under technical support show that 37.7% strongly agree, and 50.8% agree that they can access help when encountering technical issues, while 10.7% disagree and 0.8% strongly disagree, resulting in a mean of 3.25. Regarding adequate troubleshooting guides, 55.7% strongly agree, and 37.7% agree, with 6.6% disagreeing, leading to a mean score of 3.49. Satisfaction with technical support is also high, with 55.7% strongly agreeing, and 38.5% agreeing, while 5.7% disagree, resulting in a mean of 3.50. Finally, 37.7% strongly agree, and 50.8% agree that there is a clear process for reporting technical issues, with 10.7% disagreeing and 0.8% strongly disagreeing, yielding a mean score of 3.25. The weighted mean for technical support is 3.37, indicating good overall satisfaction with the support provided for technical issues.

The grand mean of 3.34 reflects a generally positive perception of the system quality of digital library resources among postgraduate students, with high ratings across all dimensions, particularly in performance efficiency and system reliability. The findings

suggest that while ease of use could be further enhanced, the digital library system meets users' needs in terms of reliability, efficiency, and technical support.

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#### 4.4 Presentation of Hypotheses

4.4.1 There will be no significant influence of information quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State

**Table 4.6a-c: Influence of Information Quality on the Motivation to Use Digital Library Resources among Postgraduate Students of Private Universities in Oyo State**

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.390 <sup>a</sup>	.152	.148	.54128

a. Predictors: (Constant), Information Quality

##### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.058	1	11.058	37.743	.000 <sup>b</sup>
	Residual	61.528	210	.293		
	Total	72.586	211			

a. Dependent Variable: Motivation to Use Digital Library Resources.

b. Predictors: (Constant), Information Quality

##### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.436	.271		5.297	.000
Information Quality	.036	.006	.390	6.144	.000

a. Dependent Variable: Motivation to Use Digital Library Resources.

Table 4.6a-c presents the analysis of the influence of information quality on the motivation to use digital library resources among postgraduate students in private universities in Oyo State. The model summary reveals a correlation coefficient (R) of 0.390, indicating a moderate positive relationship between information quality and motivation to use digital library resources. The R Square value of 0.152 suggests that approximately 15.2% of the variance in students' motivation to use digital library resources is explained by information quality. The Adjusted R Square (0.148) aligns closely with the R Square, showing consistent explanatory power. The standard error of the estimate is 0.54128, indicating the average distance of the data points from the fitted line.

The ANOVA table shows that the model is statistically significant, with a F value of 37.743 and a p-value (Sig.) of 0.000, which is well below the 0.05 threshold. This confirms that information quality is a significant predictor of students' motivation to use digital library resources.

The coefficients table provides further insights into the relationship. The constant (intercept) has a value of 1.436, which represents the baseline motivation level when information quality is zero. The unstandardized coefficient (B) for information quality is 0.036, meaning that for each unit increase in information quality, the motivation to use digital library resources increases by 0.036 units. The standardized coefficient (Beta) is 0.390, showing the strength of information quality's influence on motivation. The t-values (5.297 for the constant and 6.144 for information quality) and the associated p-values (both 0.000) confirm that these coefficients are statistically significant.

In summary, this analysis indicates that information quality has a moderate and statistically significant impact on students' motivation to use digital library resources, explaining about 15% of the variation in motivation levels among postgraduate students in private universities in Oyo State. This finding suggests that improving the accuracy, relevance, and reliability of digital library information can positively influence students' motivation to utilize these resources.

4.4.2 H<sub>02</sub> There will be no significant influence of system quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State;

**Table 4.7a-C: Influence of System Quality on the Motivation to Use Digital Library Resources Among Postgraduate Students of Private Universities in Oyo State.**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.146 <sup>a</sup>	.021	.017	4.07151

a. Predictors: (Constant), System Quality

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	75.514	1	75.514	4.555	.014 <sup>b</sup>
	Residual	3481.203	210	16.577		
	Total	3556.717	211			

a. Dependent Variable: Motivation to Use Digital Library Resources

b. Predictors: (Constant), System Quality

<b>Coefficients<sup>a</sup></b>					
<b>Model</b>	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>t</b>	<b>Sig.</b>
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
(Constant)	16.183	2.555		6.334	.000
System Quality	.292	.137	.146	2.134	.014

a. Dependent Variable: Motivation to Use Digital Library Resources

Table 4.7a-c presents the results of the linear regression analysis of the influence of system quality on the motivation to use digital library resources among postgraduate students in private universities in Oyo State. The model summary shows a correlation coefficient (R) of 0.146, suggesting a weak positive relationship between system quality and motivation to use digital library resources. The R Square value is 0.021, indicating that system quality explains about 2.1% of the variance in students' motivation to use digital library resources. The Adjusted R Square (0.017) is slightly lower but close to the R Square value, showing the model's consistent but limited explanatory power. The standard error of the estimate is 4.07151, reflecting the average deviation of data points from the regression line.

The ANOVA table highlights the model's statistical significance, with an F value of 4.555 and a p-value (Sig.) of 0.014, which is below the 0.05 threshold. This confirms that system quality has a statistically significant but modest impact on motivation to use digital library resources. Furthermore, the coefficients table provides specific values for the relationship. The unstandardized coefficient (B) for system quality is 0.292, which implies that for each unit increase in system quality, the motivation to use digital library

resources increases by 0.292 units. The standardized coefficient (Beta) of 0.146 indicates a weak positive influence of system quality on motivation. The t-values (6.334 for the constant and 2.134 for system quality) and the p-value of 0.014 for system quality indicate that these coefficients are statistically significant.

In summary, while system quality significantly influences students' motivation to use digital library resources, it accounts for only a small portion (2.1%) of the variation in motivation levels among postgraduate students in private universities in Oyo State. This finding suggests that while improvements in system quality (e.g., ease of navigation, performance efficiency, reliability) may slightly enhance students' motivation, other factors are likely to play a more substantial role in driving their motivation to utilize digital library resources.

4.3.3 H<sub>03</sub> There will be no significant combined influence of information quality and system quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State

**Table 4.8a-c: Combined Influence of Information Quality and System Quality on the Motivation to Use Digital Library Resources among Postgraduate Students of Private Universities in Oyo State**

**Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.402 <sup>a</sup>	.162	.154	3.77636

a. Predictors: (Constant), Information Quality, System Quality

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	576.188	2	288.094	20.202	.000 <sup>b</sup>
	Residual	2980.529	209	14.261		
	Total	3556.717	211			

a. Dependent Variable: Motivation to Use Digital Library Resources

b. Predictors: (Constant), Information Quality, System Quality

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	12.472	2.451		5.088	.000
Information Quality	.541	.156	.120	1.551	.012
System Quality	.295	.050	.460	5.925	.000

a. Dependent Motivation to Use Digital Library Resources

Table 4.8a-c presents the result of multiple regression analysis on the combined influence of information quality and system quality on the motivation to use digital library resources among postgraduate students of private universities in Oyo State. The model summary shows a correlation coefficient (R) of 0.402, indicating a moderate positive relationship between the combined predictors (information quality and system quality) and students' motivation to use digital library resources. The R Square value of 0.162 suggests that together, information quality and system quality account for 16.2% of the variance in students' motivation. The Adjusted R Square of 0.154 is close to the R Square, reflecting that the model's predictive capability remains consistent. The standard

error of the estimate is 3.77636, representing the typical distance that observed motivation values fall from the model's predicted values.

The ANOVA table also indicates that the model is statistically significant, with an F value of 20.202 and a p-value (Sig.) of 0.000, well below the 0.05 threshold. This confirms that, combined, information quality and system quality significantly influence students' motivation to use digital library resources.

The coefficients table provides further insights into each predictor's influence. The unstandardized coefficient (B) for information quality is 0.541, indicating that for each unit increase in information quality, motivation to use digital library resources increases by 0.541 units. On the other hand, the unstandardized coefficient (B) for system quality is 0.295, meaning that each unit increase in system quality raises motivation by 0.295 units. The standardized coefficient (Beta) for system quality is 0.460, indicating a stronger influence on motivation compared to information quality. The t-values (1.551 for information quality, and 5.925 for system quality) and the respective p-values of 0.012 for information quality and 0.000 for system quality indicate that both predictors are statistically significant.

In summary, both information quality and system quality significantly contribute to motivating students to use digital library resources, with system quality showing a stronger impact. While the combined influence of these factors explains 16.2% of the variation in motivation levels, other factors not included in this model likely also contribute to students' motivation to engage with digital library resources.

## 4.5 Discussion of Findings

### **Research Question One: Motivation to Use Digital Library Resources**

The study found a generally high level of motivation to make use of digital library resources among the respondents. Specifically, it was found that postgraduate students have favourable perception of ease of access and perceived academic support. However, the finding also indicates improvements in certain areas such as accessibility without technical support. Studies indicates that a greater number of users experienced flow while utilizing web digital libraries compared to mobile libraries<sup>clxv</sup>. The perception among scholars is that ease of use motivates information to use digital resources and when this is not the case, they are likely to choose other source of information.

The determinants affecting the motivation to use digital library resources have been examined by several scholars and they all come down to users perceptions. Study findings indicated that interface characteristics affect cognitive responses, which in turn predict students' intentions to utilize digital libraries. Navigation, individual differences, and system variables substantially influenced usability. The utility is directly influenced by the qualities and quality of the system. Ultimately, it has been determined that perceived utility exerts the greatest influence on the intention to use digital libraries<sup>clxvi</sup>.

### **Research Question Two: Perception of Information Quality of Digital Library Resources**

It was also found that there is highly positive perception of information quality in digital library resources among the respondents indicating that the digital library meets students' academic needs effectively, with particularly high ratings in credibility and

relevance. However, there is room for improvement, particularly in the timeliness of updates. The literature assessments of IS success studies indicated that information quality exerted a moderate influence on net benefits<sup>clxvii</sup>. Prior research on information systems (ISs) has demonstrated that information quality favourably influences perceived value and user happiness, which subsequently considerably affects the motivation to reuse digital library resource<sup>clxviii</sup>. The results demonstrate the beneficial impact of information quality on user happiness, perceived net benefits, and the intention to reuse. Library users who consider the information quality of the Library 2.0 application as superior to that of others are more inclined to persist in utilizing the system. The quality of information is crucial in evaluating users' perceived net advantages and pleasure, which directly influences the intention to repeat Library 2.0 applications, as "library services are essentially information-intensive"<sup>clxix</sup>.

Scholars evaluated the quality of the digital library, characterized by the quality of information, system quality, and overall service quality. The analysis of users' views of virtual communities and digital libraries has been conducted to comprehend the true nature of the e-quality experienced by users. The user's perception study indicated that digital libraries offer superior information, system, and service quality compared to virtual communities.

An examination of faculty members' utilization patterns of digital information resources and their satisfaction with university resources. Faculty members express dissatisfaction with the university's current e-resources. Service-related issues are the primary cause of dissatisfaction, including restricted titles and access to past issues. Identified constraints include a limited number of titles, restricted access to back issues, challenges in

information retrieval, inability to access from home, limited computer availability, and slow download speeds. Nonetheless, inadequate infrastructure and restricted access to these resources constitute the primary cause of unhappiness.

In a study conducted among students in Malaysia to evaluate students' perception of information quality in digital libraries, it was found that majority of the respondents agreed that digital information resources retrieved are accurate, interpretable, comprehensive, dependable, complete, and sufficient for their needs for their study and/or research<sup>clxx</sup>.

### **Research Question Three: Perception of System Quality of Digital Libraries.**

The study also found that the perception of the system quality of digital library resources among postgraduate students is high, with high ratings across all dimensions, particularly in performance efficiency and system reliability. However, the findings suggest that ease of use could be further enhanced. The finding revealed what has been reported in previous studies across the world. Scholars have suggested that students have higher acceptance of mobile library services<sup>clxxi</sup>. They indicated that user's perception is deferred by the institute to institute and the services they offered. Further, users have positive attitude towards digital library but at the same time most of them are unaware about various services offered by the digital library. It is also found that interface considered to be an important factor to use digital library.<sup>clxxii</sup> Employed technology acceptance model and support that TAM has explanatory power to predict intention. Experts also agreed that users have positive perception towards wireless application in

the context of library and information services and most of the users responded affirmatively to be a part of wireless services if offered<sup>clxxxiii</sup>.

Technology offers opportunities to be innovative, as the following discussion of electronic resources and services demonstrates, but it is important to bear in mind that not all Postgraduate students are equal when it comes to access to computing equipment, the availability, speed, and stability of internet connections, or the information skills that are needed to make optimum use of digital libraries.

Access to print-based library materials continues to be important, because not all of the information resources that postgraduate students need are available in electronic format: many of our most valuable research materials are still print-based. Although there has been a shift away from purchasing print materials to be housed in a physical building and toward providing access to licensed digital resources made available over a computer network, librarians continue to work to resolve issues pertaining to distance delivery of resources that are unavailable in digital format. Online catalogues and indexing and abstracting systems provide Postgraduate students with convenient access to bibliographic information about valuable scholarly documents. When those documents are not available in full-text form online, a demand is generated for delivery from a library's print collection or from the collections of other libraries through interlibrary loans.

In addition, the finding of this study on ease of use of digital libraries is noteworthy. Ease of use is a crucial aspect of system quality in digital libraries, as it directly impacts user engagement and satisfaction. A digital library that is easy to navigate enables users to

find, access, and utilize resources without difficulty. For postgraduate students, who often engage in advanced research activities, intuitive interfaces, clear search functions, and well-organized databases are essential<sup>27</sup>. When digital library systems are designed to be user-friendly, it minimizes the learning curve, allowing students to focus more on their research rather than struggling with the technical aspects of the system. Ease of use is not just about simplicity; it also involves providing meaningful guidance and features like search filters, sorting options, and tutorials that can help users quickly adapt to the platform. Ultimately, a user-friendly digital library enhances the overall experience, making it more likely that students will continue using the platform for their academic needs<sup>28</sup>.

### **Hypothesis One: Information Quality and Motivation to Use Digital Library Resources**

The test of the first hypothesis indicates that information quality has a moderate and statistically significant impact on students' motivation to use digital library resources. This finding is supported by results of similar studies although many of the studies reported a stronger influence of information quality on the motivation to use digital library resources. Information users approach information systems to obtain information, so it stands to reason that the quality of information obtained would be of some interest to them. To empirically confirm this, various studies have been conducted to evaluate the impact of information quality on the motivation of various categories of users to make use of digital information resources. Researchers in Pakistan conducted an exploratory study aimed at modelling the factors influencing the actual utilization of a digital library system. A research model was constructed utilizing Delone and McLean's information

system success model and delineated as an empirical study. The results indicated that the quality aspects of digital library systems significantly impact satisfaction, behavioural intention, and variability in actual usage. The quality of information is the most significant predictor of user happiness, which, in turn, profoundly influences students' intention to utilize the system. User satisfaction and behavioural intention to utilize the system exhibit a robust positive correlation with the actual usage of a digital library system. In summary, behavioural intentions are significantly affected by system quality, information quality, and service quality<sup>clxxiv</sup>.

A related study conducted a confirmatory study to model and investigate the determinants of user satisfaction in a digital library system. The results indicated that Information Quality has the most significant impact on customer happiness, followed by System Quality and Service Quality as contributing variables. Furthermore, the Preacher and Hayes methodology was employed to assess the indirect effect. Partial mediation occurred in all effects from this method. The quality aspects and Information System significantly influence behavioral intentions<sup>clxxv</sup>.

Digital libraries are not merely a collection of information resources but have evolved into a digital community for communication, exploration, and electronic learning. The economic investment in developing effective digital library (DL) systems necessitates substantial usage of financial, temporal, energetic, and human resources. In line with this, a study examine the factors influencing the utilization of digital libraries, which may result in user satisfaction and increased engagement with information systems such as digital libraries. Nonetheless, these characteristics may operate variably across distinct cultures. In light of this reality, DeLone and McLean's Information Systems Success

Model (ISSM) is evaluated and augmented within a local academic framework. The results indicate that information quality is a significant predictor of DL system utilization<sup>clxxvi</sup>.

Furthermore, a research work systematically evaluates, compiles, analyzes, and synthesizes research on the D&M model within the e-learning context. This review employs both automated and human search techniques to gather pertinent studies from 2010 to 2020. Ninety-two primary studies were identified following the application of inclusion and exclusion criteria. The results indicate that the majority of the examined research were performed within the education sector. The success category was the most extensively examined area among the evaluated studies. The majority of studies formulated a hybrid or extended model. This study discovered gaps in the literature and offers seven prospective areas for future investigation, including studies to assess the net benefits at the organizational level of analysis<sup>clxxvii</sup>.

Another study empirically examines the predictive influence of digital literacy on e-government performance in Nigeria using the public value framework. This study's principal finding is that digital literacy significantly influences the utilization of e-government, user happiness, and the net advantages derived from e-government. The ramifications of the findings were examined<sup>clxxviii</sup>.

In Nigeria, researchers also deployed the modified DeLone and McLean Information Systems Success (D&M ISS) model to identify the success elements influencing the acceptance of the e-learning system Canvas among students at a Nigerian university. The findings somewhat corroborated the influence of quality antecedents on students'

behavioural intention and user happiness. There was comprehensive support for the correlation between behavioural intention and student satisfaction over their actual utilization of Canvas. The study seeks to contribute to the development of strategies and approaches to improve the adoption of eLearning systems in developing nations, particularly Nigeria<sup>clxxxix</sup>.

Another study conducted in Turkey sought to assess the efficacy of the Student Information System (SIS) utilizing the revised Information System Success Model (IS success model) put out by Delone and McLean. The empirical results indicate that system quality, information quality, and service quality significantly influenced usage. Nonetheless, system quality, information quality, and service quality did not have a substantial impact on user satisfaction. Moreover, both system utilization and user satisfaction exert no substantial influence on the effectiveness of SIS. Consequently, higher education institutions should assess the performance of current SISs to enhance their utilization and improve student satisfaction<sup>clxxx</sup>.

In Indonesia, a study seeks to predict the determinants influencing system utilization, user satisfaction, net benefits, and user loyalty towards digital library services. The findings indicate that all hypotheses were validated. Service quality was the primary determinant of user happiness, which in turn was the foremost predictor of usage. The net benefits variable was primarily influenced by usage. The primary factor influencing user loyalty was net benefits. This research delineates quality standards that might serve as a benchmark for relevant stakeholders to enhance digital library services, user happiness, use, net benefits, and user loyalty<sup>clxxx</sup>.

## **Hypothesis Two: System Quality and Motivation to Use Digital Library Resources**

In the same vein the study found that system quality has a significant but weak influence on the motivation to use digital library resources among postgraduate students in private universities in Oyo State. This finding is supported by what has been reported by previous studies while it also contradicts some previous studies. Researchers assessed the effectiveness of OPAC implementation utilizing the Delone and McLean Model. Comprises seven variables: information quality, system quality, service quality, usage, user convenience, interest in utilization, and net benefits. The results indicate that it is essential to prioritize enhancements to the indicators associated with the Delone and McLean Model variables that exhibit an average percentage below the overall average percentage of all indicators<sup>clxxxii</sup>.

A related also investigated factors determining the use of information systems inside the Village Financial System to promote a sustainable information society (SIS). The research findings indicate that system information quality, information quality, and trust in technology significantly influence usage and user happiness, whereas service quality and trust in government institutions do not exert a similar effect. The variables of usage and user satisfaction significantly influence net benefits and the sustainability of the SIS. The conclusions of this study can offer e-government practitioners enhanced understanding of how to address issues related to user happiness and augment faith in compulsory e-government services, hence facilitating the realization of SIS and the "smart village"<sup>clxxxiii</sup>.

Researchers experimentally examined the evaluations of Information Systems success within the banking sector of Saudi Arabia. The study's findings empirically substantiate

the positive correlation among the dimensions of the IS success model. The study found that the dimensions of information systems (information system quality, system quality, and service quality) significantly enhance customer satisfaction and motivation to use digital library resources. However, it was found that only information quality significantly positively influences the intention to use, but system quality and service quality do not have a significant impact. Both usage and desire to use exert a strong beneficial impact on user happiness. User happiness, usage, and intention to use exert a considerable positive impact on net benefit<sup>clxxxiv</sup>.

In a related study, scholars conducted an evaluation of enterprise information systems (EIS) success within an organizational framework. The investigation results demonstrate that the quality of information and systems positively influenced user happiness and individual impact. User satisfaction positively influenced individual impact, which ultimately resulted in organizational effect. The findings indicated that the employed model possesses satisfactory convergent and discriminant validities, together with adequate reliability<sup>clxxxv</sup>.

**Hypothesis Three: Information Quality, System Quality, and Motivation to use Digital Libraries.**

Overall, the test of the third hypothesis revealed that, both information quality and system quality significantly contribute to motivating students to use digital library resources, with system quality showing a stronger impact. This research seeks to enhance the comprehension of information system success aspects as a pivotal component influencing

banking success. It seems that information quality and service quality are essential qualities, not just for digital libraries, but for all information systems. Researchers from Asia conducted a study to validate an integrated model of e-filing continuance usage. Findings suggest that citizens' continuance usage intention of e-filing is influenced by system quality, user satisfaction and habit. User satisfaction had the strongest impact on e-filing continuance usage intention. This study makes a valuable contribution to knowledge through the extension and validation of the ECM and IS Success model to explore salient factors affecting e-filing continuance usage intention<sup>clxxxvi</sup>.

This study investigated the impact of service quality parameters during COVID-19 on individuals' intention to persist in utilizing mHealth services. The findings revealed multiple correlations between service quality elements and individuals' ongoing utilization of mHealth. The primary element influencing users' persistent engagement with mHealth was assurance, succeeded by hedonic advantages, efficiency, reliability, and content quality. The pertinent cause-and-effect links were discerned, and the trajectory for quality enhancement was deliberated. The findings from this study can assist healthcare policymakers in promptly and effectively addressing COVID-19 problems<sup>clxxxvii</sup>.

In a related study in which both information and system quality were among the variables, researchers investigate the factors influencing user satisfaction and the level of user satisfaction with the online ticket application. The findings indicated that users expressed satisfaction with the online ticket application, with two out of eight hypotheses rejected and six approved. The elements influencing user satisfaction in online ticket applications

include accuracy, convenience of use, timeliness, system quality, information quality, and service quality<sup>elxxxviii</sup>.

Furthermore, researchers examined the factors that influence the utilization of food service applications and to enhance their effectiveness for optimal advantages. The study found that the use of food service applications can enhance performance, facilitated by high-quality supporting facilities and systems, hence influencing user acceptability of the application. This research offers companies insights into the determinants affecting their application usage behaviour, aiming to enhance the adoption and utilization of food service applications<sup>elxxxix</sup>.

In another study that focused on the academic setting, researcher from Zimbabwe investigated the influence of perceived e-learning service quality on student satisfaction and loyalty in a developing nation. The results indicated substantial positive correlations between perceived characteristics of e-learning service quality and student satisfaction in e-learning. Student satisfaction was found to have a favourable impact on student loyalty towards e-learning ( $P < 0.05$ ). Consequently, it was determined that system quality, information quality, and service quality strongly impact student happiness and loyalty in e-learning. The study consequently advised that the higher education sector should develop e-learning platforms that facilitate accessibility, navigation, and user adaptability<sup>exc</sup>.

The examination of the structural model indicated that users' behavioural intentions for Metaverse usage were highly influenced by information quality (IQ) and service quality (SVQ). The results demonstrated a substantial influence of systems quality (SQ),

information quality (IQ), and service quality (SVQ) on performance evaluation (PE). Ultimately, a notable impact of PC on the EE factor was identified<sup>139</sup>. Another study, this time in the medical sector, examines the determinants influencing telemedicine adoption by synthesizing the Unified Theory of Acceptance and Use of Technology, the Information System Success Model, and perceived security. The findings indicated that user satisfaction is significantly influenced by the information and system, quality<sup>exci</sup>.

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## Chapter Five

### Conclusion

#### 5.1 Summary of Findings

The findings of the study are summarised below;

1. The study found a generally high level of motivation to make use of digital library resources among the respondents. Specifically, it was found that postgraduate students have favourable perception of ease of access and perceived academic support. However, the finding also indicates improvements in certain areas such as accessibility without technical support.
2. It was also found that there is highly positive perception of information quality in digital library resources among the respondents indicating that the digital library meets students' academic needs effectively, with particularly high ratings in credibility and relevance. However, there is room for improvement, particularly in the timeliness of updates.
3. The study also found that the perception of the system quality of digital library resources among postgraduate students is high, with high ratings across all dimensions, particularly in performance efficiency and system reliability. However, the findings suggest that ease of use could be further enhanced.
4. The test of the first hypothesis indicates that information quality has a moderate and statistically significant impact on students' motivation to use digital library resources.
5. In the same vein the study found that system quality has a significant but weak influence on the motivation to use digital library resources among postgraduate students in private universities in Oyo State.

6. Overall, the test of the third hypothesis revealed that, both information quality and system quality significantly contribute to motivating students to use digital library resources, with system quality showing a stronger impact.

## **5.2 Conclusion**

This study reveals a generally high level of motivation among postgraduate students in private universities in Oyo State to utilize digital library resources, with a positive perception of both information quality and system quality. Postgraduate students view digital library resources as accessible and supportive of their academic needs. The study identifies specific strengths in information credibility, relevance, system reliability, and performance efficiency. However, it also highlights areas where further enhancements are possible, notably in the ease of use, timeliness of updates, and accessibility without technical support. Findings demonstrate that both information quality and system quality significantly influence students' motivation to engage with digital library resources, with system quality having a more pronounced impact.

## **5.3 Recommendations**

1. It is important for library managements in private universities to maintain high motivation levels and address accessibility concerns. This can be done by reducing the reliance on librarians for access to digital resources by enhancing system intuitiveness and user guidance within the digital library interface.
2. In light of the high perception of credibility and relevance, yet lower satisfaction with timeliness, academic library management in private universities should prioritize

more frequent updates to digital library resources to ensure students have access to the latest academic resources.

3. To strengthen system quality, universities should prioritize ongoing usability improvements in the digital library, particularly simplifying navigation and search functions to reduce the learning curve for new users.
4. Since information quality positively influences students' motivation, academic libraries in private universities should continue to prioritize the credibility and relevance of resources, ensuring that students perceive these resources as directly aligned with their academic needs.
5. Given the significant yet weaker influence of system quality on motivation, academic libraries in private universities should maintain a high level of system performance, with a focus on reliability, while also exploring enhancements to the user experience to support consistent and seamless usage.
6. To maximize the motivational impact of digital libraries, academic libraries in private universities should consider both information quality and system quality enhancements, addressing specific areas for improvement identified in this study, which will promote sustained engagement with digital library resources.

#### **5.4 Contributions to Knowledge**

This study enriches the understanding of digital library engagement by linking ease of access, perceived academic support, and timely information updates directly to students' motivation. It offers a framework that associates specific qualities of digital resources with user motivation, which can be applied in similar contexts for evaluating digital library effectiveness.

By empirically testing the relationships between information quality, system quality, and motivation, this study supports existing theories on technology acceptance and motivation,

demonstrating that system quality and information quality significantly influence user motivation. The findings also reveal the relative strength of each factor's influence, adding a nuanced understanding to models that examine motivation in digital resource usage.

This research adds to the empirical literature on digital library usage among postgraduate students in Nigeria, offering data-driven insights specific to the Nigerian context and the private university sector. The study's findings inform the need for digital library improvements that enhance academic support, usability, and access to current information, providing actionable insights for university administrators aiming to foster student engagement with library resources.

### **5.5 Suggested Areas for Further Studies.**

Future researchers can explore the following areas;

- The Role of User Training in Enhancing Digital Library Utilization among Postgraduate Students in Nigerian Universities
- Assessing the Impact of Timely Updates and Content Relevance on Academic Performance: A Study of Digital Library Resources
- Examining the Relationship between Digital Library Usability and Academic Resource Accessibility in Public vs. Private University Settings

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Fu, Y. *Experiencing the Academic Library in the Digital Age: From Information Seeking and User Experience to Human Information Interaction* (Doctoral dissertation, UCL (University College London)). 2021

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## Appendix

### Questionnaire

**Department of Information Management,  
Faculty of Communication and Information Science,  
Lead City University, Ibadan, Oyo State, Nigeria.**

Dear Respondent,

I am a Master degree student of the above-named Department and Institution. I seek your indulgence to help attend to this questionnaire to the best of your ability. It is aimed at gathering relevant data on the topic, Influence of Information Quality and System Quality on Motivation to Use Digital Library Resources Among Postgraduate Students in Private Universities, Oyo States, Nigeria. Your response is strictly confidential and will be used only for research purposes.

Thanks.

#### Section A: Demographic Information

Name of Institution:.....

Gender: Male { }, Female { }

Age Range: 25 – 29 { }, 30 – 34 { }, 35 – 39 { }, 40 – 44 { }, 45 – 49 { }, 50 and above { }

Programmes: PGD { }, Masters { }, Mphil { }, Mphil/PhD { }, PhD { }

#### Section B: Motivation to Use Digital Library Resources

S/N	Perceived Usefulness of Digital Library Resources	SA	A	D	SD
1.	Using digital library resources improves my academic performance.				
2.	Digital library resources are useful for completing my assignments and research.				

3.	Digital library resources enable me to access relevant academic materials quickly.				
4.	Using digital library resources enhances my productivity in my studies.				
5.	The resources available in the digital library meet my academic needs.				
6.	I rely on digital library resources for quality and reliable information.				
7.	Digital library resources are more convenient than traditional library resources.				
8.	Digital library resources help me to stay updated with recent research in my field.				
	<b>Perceived Ease of Use of Digital Library Resources</b>				
9.	I find it easy to use the digital library resources.				
10.	The procedures for accessing digital library resources are clear and understandable.				
11.	It is easy to navigate through the digital library's search and retrieval system.				
12.	I can use the digital library resources without needing technical support.				
13.	Learning to operate the digital library system is easy for me.				
14.	The digital library system has a simple and clear interface.				
15.	I feel comfortable using the digital library resources for academic purposes.				
16.	I can access digital library resources on different devices (e.g., laptop, smartphone) without difficulty.				

## Section C: Information Quality Scale

**Instructions:** Please indicate your level of agreement with each of the following statements about the information quality of the digital library resources you use.

	<b>Accuracy</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
17.	The information provided by the digital library is accurate and error-free.				
18.	I find the resources in the digital library to be credible and trustworthy.				
19.	The digital library offers up-to-date and accurate information for my academic needs.				
20.	The digital library's search results consistently provide correct and relevant information.				
21.	<b>Relevance</b>				
22.	The information I find in the digital library is relevant to my academic needs.				
23.	The digital library resources are tailored to the subjects I study.				
24.	I am satisfied with the relevance of search results provided by the digital library.				
25.	The digital library provides a wide range of relevant academic resources and materials.				
26.	<b>Completeness</b>				
27.	The digital library provides comprehensive information on various academic topics.				
28.	I can find all the information I need for my assignments through the digital library.				
29.	The resources in the digital library cover the topics I search for in depth.				
30.	The digital library provides sufficient information to support my research activities.				

31.	<b>Timeliness</b>				
32.	The digital library provides access to the most current academic research and publications.				
33.	The information available in the digital library is regularly updated.				
34.	The digital library includes recent journals, articles, and books in my field of study.				
35.	I am satisfied with the timeliness of the information provided by the digital library.				

#### Section D: System Quality Scale

**Instructions:** Please indicate your level of agreement with each of the following statements about the system quality of the digital library resources you use.

SN	Ease of Use	SA	A	D	SD
1.	The digital library system is easy to navigate.				
2.	The interface of the digital library is user-friendly.				
3.	It is easy to find specific resources in the digital library.				
4.	The digital library has a simple and intuitive search function				
	<b>Performance Efficiency</b>				
5.	The digital library system loads pages quickly.				
6.	I can download digital resources (e.g., PDFs, e-books) without delays.				
7.	The digital library's search results are displayed in a timely manner.				
8.	The digital library performs well even during peak usage hours.				
	<b>System Reliability</b>				
9.	The digital library rarely experiences downtime.				
10.	I have not encountered technical errors when using				

	the digital library.				
11.	The digital library system maintains consistent performance over time.				
12.	The digital library is reliable for accessing academic resources whenever needed.				
	<b>Technical Support</b>				
13.	I can easily access help or support when I encounter technical issues with the digital library.				
14.	The digital library provides adequate instructions or guides for troubleshooting.				
15.	I am satisfied with the technical support provided for the digital library system.				
16.	There is a clear process for reporting technical issues related to the digital library.				

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## Bio-data

### A. Personal Data

1. Full Name:
2. Address:
3. Email:
4. Date and Place of Birth:
5. Nationality: - Nigerian
6. Name and Address of Next of Kin:

Add. Same as above

### A. Educational Background

Educational Institutions attended with dates and Qualifications:

i. Primary Education:

ii. Secondary Education:

iii. Higher Educational Institutions:

a.

### B. Working Experience with Dates

a. Organisation:

Role:

Date:

### C. Working Experience with Dates

b. Organisation:

Role:

Date:

c. Organisation:

d. Role:

Date:

### D. Awards and Fellowships:

i.

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**Signature**

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**Date**

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### **University Compliance Certification**

This is to certify that this thesis by Timothy Akinlolu OKE with Matriculation Number LCU/PG/001067 in the Department of Information Management, Lead City University, Ibadan, is in FULL compliance with the approved university format and style.

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**Signature**

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**Date**

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