

Social Media Use, Critical Thinking Skills, and Digital Reference Service Delivery of Librarians in Tertiary Institutions in Ekiti State, Nigeria.

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### **Certification**

This is to certify that Hasanat Adeola BABARINDE, with Matriculation Number LCU/PG/003220, carried out this research titled "Social Media Use, Critical Thinking Skills and Digital Reference Service Delivery of Librarians in Tertiary Institutions, Ekiti State, Nigeria, in the Department of Information Management, Faculty of Communication and Information Science, Lead City University, Ibadan, Oyo State, Nigeria, for the Award of Master Degree in Library and Information Science (MLIS) and that this work has not been previously submitted.

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## **Dedication**

This thesis is dedicated to Almighty Allah, the Most Gracious, the Most Merciful, whose divine wisdom, guidance, and blessings have been my steadfast companions throughout this work.

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## Abstract

The transformative power of contemporary digital technologies has transformed how librarians in tertiary institutions interact and communicate with their users. However, despite the benefits of technology, librarians face challenges in delivering digital reference services through social media platforms and developing critical thinking skills to meet users' information needs. Therefore, the study investigated the influence of social media use and critical thinking skills on the digital reference services delivery of librarians in tertiary institutions in Ekiti State, Nigeria. A mixed-method approach was employed, combining a questionnaire and structured interviews for data collection from 145 librarians across five tertiary institutions in Ekiti State, utilising a total enumeration sampling technique. Descriptive and inferential statistics were applied for quantitative data analysis, while content analysis was used to interpret the qualitative results.

The results of the hypothesis indicated that both social media use ( $\beta=0.397$ ,  $t=4.389$ ,  $P<0.05$ ) and critical thinking skills ( $\beta=0.288$ ,  $t=3.058$ ,  $P<0.05$ ) significantly influence digital reference service delivery. Librarians use synchronous and asynchronous communication modes to provide these services, making library resources readily accessible to their users. However, challenges such as insufficient digital information literacy skills, inadequate infrastructure, poor internet connectivity, and limited development of social media use and critical thinking remain. In conclusion, digital reference service delivery and social media usage in tertiary institutions in Ekiti State are still in their early stages. The study recommends enhancing infrastructure and integrating social media to improve the efficiency and effectiveness of digital reference services delivery and implementing information literacy programs to foster critical thinking skills.

**Keywords:** Digital Reference Service Delivery, Social Media Use, Critical Thinking Skills, Librarians, Tertiary Institutions, Ekiti State, Nigeria.

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## List of Acronyms

<b>Abbreviation</b>	<b>Meaning</b>
ABUAD	Afe Babalola University Ado-Ekiti
AI	Artificial Intelligences
AR	Augmented Reality
BOUESTI	Bamidele Olomilua University of Science, Education and Technology, Ikere-Ekiti
CT	Critical Thinking Skills
DoIT	Diffusion of Innovation Theory
DRSD	Digital Reference Service Delivery
EKSU	Ekiti State University Ado-Ekiti
FAQs	Frequently Ask Questions
FUOYE	Federal University Oye-Ekiti
MSN	Microsoft Networking
RED	Recognition of Assumption, Evaluation of Assumption, and Draw Conclusion
SMU	Social Media Use
U&GT	Uses and Gratification Theory
ULs	University Librarians
VoIP	Voice over Internet Protocol
VR	Virtual Reality

## **Chapter One**

### **Introduction**

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

The transformative power of contemporary digital technologies on digital reference service delivery in tertiary institutions cannot be overstated. This technological revolution has redefined the librarians' role and necessitated a unique blend of technical expertise, social media savvy, and critical thinking skills. The high level of technology has shifted the focus of librarians from mere custodians of physical collections to facilitators of knowledge access, curators of digital resources, and innovators in information literacy. They are now adept at navigating the vast expanse of online information, leveraging social media to engage with user communities, and cultivating critical thinking skills to evaluate the credibility and reliability of digital sources.

However, librarians have yet to see the prerequisite of technology despite its crucial role in navigating a vast expanse of information regarding digital reference service delivery and library service generally. Digital Reference Services Delivery (DRSD) is an electronic mode of communicating library service through digital methods to library users irrespective of location. It has significantly enhanced the efficiency of library services. This mode of library communication, which developed in the 1980s when commercial search engines such as Google Answers, Lycos IQ, WebCrawler, DogPile, and AltaVista, among others, changed the users' behaviour in searching for information, has re-orientated library users with a drastic change in the use of library information resources<sup>1</sup>.

The new wave of search engines relegates the traditional means of getting information from the library's four walls redundant, reduces the bulk work of librarians, and replaces it with electronic communication where the information seekers can quickly assess the information needed in their comfort zones. This technological advancement bodes well for the profession's future, showcasing the adaptability of librarians to switch from the traditional means of relaying information to their clientele to uploading all their relevant materials and making their information available on their various websites, social media platforms, and databases for the convenience of their users. This practice later developed into standard library services, including offering email services and Frequently Asked Questions (FAQs) that answered standard questions to meet library users' expectations.

Technological advances, coupled with this new phenomenon, have played a pivotal role in shaping the delivery of digital reference services to librarians. For instance, librarians provide reference assistance to users through this innovation (Synchronous and Asynchronous) and then tailor their service to meet the needs of their clientele and facilitate a successful and effective digital reference service delivery. Synchronous and asynchronous digital tools are Chatbots, Voice over Internet Protocol (VoIP), social media platforms, email, online forums, instant messages, and web forms, which enable the librarians to provide real-time or delayed assistance, depending on the users' needs and preference<sup>2</sup>. These digital tools have led to a paradigm shift in the library profession, with technological advancements and changing user expectations driving the evolution of traditional reference service delivery to the adoption, overhauling, and digitalisation of library services.

The most crucial area that has significantly received development is digital reference services, where librarians engage their information seekers with online tools and various social media platforms to disseminate relevant information. These services, often called 'library in

the pocket,' have become increasingly prevalent in tertiary institutions, offering students and faculty members convenient access to scholarly resources and research assistance. The library in the pocket is the digitalisation of reference service delivery in tertiary institutions, which has been motivated by several factors, including the growing preference for online interactions, the need to accommodate distance learners, and the desire to enhance user convenience and accessibility<sup>3</sup>. By offering virtual reference assistance, libraries can empower users to seek help discreetly and efficiently, facilitating uninterrupted research and learning experiences.

Digital reference services delivery offers several advantages over traditional reference methods for library patrons and personnel. These services, which refer to the electronic provision of reference assistance, provide access to expert assistance anytime, anywhere, allowing users to receive help with research queries, database navigation, citation formatting, and other information-related tasks without visiting the library in person. Moreover, digital reference services can accommodate diverse learning styles and preferences by offering multiple communication options like email, social media, text-based chat, video and audio calls, phone support, and screen sharing. Studies have shown that email, instant messaging, and social media are more frequently used digital reference service delivery modes<sup>4</sup>. The librarians frequently used WhatsApp, Facebook, the library website, telephone support, TikTok, and Instagram for effective digital reference service delivery<sup>5</sup>.

In addition, the frequency of use of digital reference service delivery by librarians varies from library to library depending on the types of services required by clientele, information-seeking behaviour (the patterns and methods used by users to find information), and channels used to seek information by clientele and the library itself. The frequency of use of digital reference service delivery is also measured based on daily, weekly, monthly, or yearly. In contrast, some measure it as always, often, rarely, hardly, or never<sup>6</sup>.

Furthermore, librarians also benefit from implementing digital reference services, as these platforms enable them to leverage their expertise and resources more efficiently and effectively while reaching out to a broader community of users. Librarians can use various digital communication tools, such as email, social media, text-based chat, video and audio calls, phone support, and screen sharing, to engage with users in real-time, provide personalised assistance, and collaborate with colleagues to address complex inquiries. Additionally, digital reference services facilitate the collection of usage data and feedback, allowing libraries to assess service effectiveness, identify areas for improvement, and tailor their offerings to meet evolving user needs.

While digital reference services offer convenience and flexibility to librarians' work, they may not be suitable for all users in all situations. One of the key challenges is ensuring clientele security protection while sourcing materials online. For example, inadequate protection to safeguard users' confidentiality and privacy makes the users prone to information insecurity when communicating sensitive information. Another consideration is balancing virtual and in-person interactions to accommodate diverse user preferences and ensure equitable access to library services. These challenges highlight the need for a balanced approach to digital reference services, where librarians must address the benefits and limitations to provide a comprehensive and effective service.

Therefore, libraries should adopt a multi-modal approach to reference service delivery, offering both virtual and face-to-face options to meet the varied needs of their patrons. Moreover, the effective implementation of digital reference services delivery relies on the continuous professional development of librarians to enhance their digital literacy skills, communication abilities, and knowledge of relevant technologies<sup>7</sup>. Engaging in training programs and

workshops, using social media, and developing critical thinking skills are inevitable for librarians.

Among many factors influencing effective digital reference service delivery in tertiary institutions are social media usage and critical thinking skills. Social media use plays a significant role in delivering digital reference services in libraries. Social media uses platforms to interact, share information, and connect with community users. It enables librarians to utilise social media platforms to communicate actively, update, share relevant content, answer users' queries, render personal assistance and support, promote library resources, events, and services, engage with users, and foster a sense of community and collaboration with other libraries and information professionals<sup>8</sup>. Due to the list mentioned above but not limited to benefits, social media use has gained prominence in the context of tertiary institutions in Ekiti State to promote library services and resources.

Furthermore, the Uses and Gratification Theory (U&GT) reveals that social media use serves as a multifaceted toolbox for librarians to fulfil various needs and desires of their clientele. This theory sheds light on the significant impact of social media use on digital reference service delivery in an online environment. By harnessing the potential of social media use, librarians can connect information seekers with their information resources through social interaction. It also provides information on current events, trends, and news and serves as an outlet for entertainment, creativity, and self-expression, allowing users to showcase their personalities and talents. Social media enhances librarians' reputations, shares their achievements and experiences, bolsters their social status, and transcends geographical boundaries. Moreover, social media use facilitates librarians in providing guidance and support, offering a digital refuge for the users seeking escape from stress and boredom and fostering more connection and support for all users.

The purpose of social media use by librarians in tertiary institutions is to leverage communication channels that will enable them to disseminate information, provide real-time service, share knowledge, foster collaboration, promote library resources, enhance user experience, encourage feedback, build relationships, support academic and research endeavours, and increase digital reference service delivery. By maintaining a presence on social media, librarians provide more efficient and effective digital reference service delivery, reach a wider clientele, and connect with students, lecturers, researchers, and faculty members outside the traditional library space.

Additionally, librarians in tertiary institutions evaluate social media use with the frequency of use. The frequency of use reveals the commitment level to engage with users online daily, weekly, monthly, quarterly, and rarely<sup>9</sup>. Daily use indicates a high level of dedication with frequent posts, shares, and responses to user queries, comments, and feedback. Weekly use shows a consistent effort to maintain a solid online presence, while monthly use suggests a more sporadic approach. Quarterly use indicates a less frequent engagement, and rare use suggests a lack of prioritisation of social media use as a communication channel for digital reference service delivery.

This frequency of use reveals the librarians' involvement in social media use as a tool for digital reference service delivery, promoting services, assisting users, and building a broader community. It also reflects the ability of librarians to respond promptly to user information needs and maintain a consistent online voice. Therefore, social media platforms serve as valuable channels for soliciting feedback, conducting surveys, gauging user preferences, and informing strategic decision-making processes within libraries. Motivation to engage with social media platforms and the ability to utilise these tools effectively have significantly

influenced the quality of digital reference services provided by librarians across tertiary institutions.

Critical thinking skills are essential skills that librarians need to acquire to analyse, evaluate, and interpret users' queries effectively and make informed decisions. Critical thinking skills assist librarians in conducting research effectively, organising, disseminating, and uploading relevant data or information to their databases to benefit their clientele. The ability to critically evaluate information sources enables librarians to locate information quickly and identify potential biases and credibility of sources for potential users. Cultivating critical thinking skills among librarians is crucial for enhancing the quality of digital reference service delivery and optimising the impact of social media outreach initiatives<sup>10</sup>.

Theoretically, the RED (Recognition, Evaluation and Draw Conclusion) critical thinking model emphasises the need for librarians to acquire critical thinking skills to effectively deliver digital reference services through social media use in tertiary institutions. Librarians' enhancement of critical thinking skills would make social media ubiquitous for communication, collaboration, and knowledge sharing in various domains such as Facebook, WhatsApp, Instagram, TikTok, YouTube, and LinkedIn to engage with community users<sup>9</sup>. These domains show that the contemporary reference service delivery has exceeded the library's four walls. Social media has become an essential part of our daily lives, particularly in academic settings where social media serves as a double-edged sword regarding critical thinking skills.

On the one hand, it provides a wealth of information. It creates a broader perspective on various topics to assist the concerned users in developing critical thinking skills in their chosen field. The platforms provide an avenue for communication, networking, and information sharing among users<sup>11</sup>. Technological advancement coupled with social media has

revolutionised libraries and made it more exciting and captivating for librarians to deliver digital reference services to their clientele. Adopting and adapting technological innovation eases librarians' reference service delivery. By fostering a culture of critical inquiry and continuous learning, libraries can empower staff members to navigate complex information landscapes, troubleshoot technical issues, and provide informed guidance to users<sup>12</sup>. It is also crucial to adapt critical thinking skill training into professional development programs that will equip librarians with the competencies to evolve technological trends and fulfil their roles as information specialists<sup>13</sup>.

Critical thinking skills are essential for librarians in digital reference service and social media engagement. It encompasses analysing information, evaluating arguments, and making reasoned judgments<sup>13</sup>. In library services, critical thinking skills enable personnel to assess the credibility and relevance of information sources, provide accurate and insightful responses to user inquiries, and adapt to changing technological and informational environments. In tertiary institutions, librarians face diverse challenges in navigating the complexities of digital reference services and social media interactions. Effective engagement with users via digital channels requires librarians to critically evaluate information requests, identify pertinent resources, and communicate information effectively. Moreover, librarians must demonstrate discernment and analytical insight when assessing the reliability of online sources and addressing misinformation or biased content.

The study on social media use, critical thinking skills, and digital reference service delivery of librarians in tertiary institutions in Ekiti State underscores the importance of technology in leveraging critical inquiry to enhance library service provision. Digital reference services and social media engagement offer valuable opportunities for libraries to extend their reach, engage with users, and adapt to evolving information environments. However, effectively utilising

these tools requires librarians to cultivate critical thinking skills, enabling them to navigate complex information landscapes, evaluate online resources, and deliver informed assistance to users.

Through a comprehensive investigation of the influence of social media use, critical thinking skills, and digital reference service delivery, the study seeks to identify strategies for optimising digital reference service delivery in Ekiti State. Despite the advent of technology, however, some libraries, if not all, are not technologically endowed, which restricts their clients' access to relevant information. On this note, the study, therefore, seeks to examine the adequacy of digital reference service delivery and the motivating factors of librarians in using social media to discharge their duties, viz-a-viz evaluating the level of critical thinking skills of librarians in Ekiti State tertiary institutions.

The study aims to integrate quantitative and qualitative research methods to provide insights into these critical areas' challenges, best practices, and opportunities. The study's outcome will inform policy decisions, professional development initiatives, and practical interventions to enhance library service provision and promote information literacy in tertiary institutions in Ekiti State and beyond.

## **1.2 Statement of the Problem**

Digital reference service delivery has become essential to the responsibilities of librarians in tertiary institutions worldwide. Nevertheless, librarians in Nigeria, particularly in Ekiti State, have not fully harnessed the potential of digital reference services delivery to meet users' information needs. Therefore, it is crucial for these librarians to leverage social media and critical thinking skills to enhance their digital reference service delivery. By doing so, they can

significantly improve their ability to address the informational needs of their digital users and create new opportunities for professional growth and development.

Extant literature has shown several efforts and research on social media use and its revolutionising libraries, particularly in tertiary institutions. Many scholars focused more on how people generally engage in social media use. For instance, one of the assumptions that technology can be uniformly applied to enhance digital reference service delivery ignores the need for tailored approaches and contextual understanding<sup>14</sup>. Another study focuses only on “overall effectiveness” and neglects the diverse range of digital reference services delivery and user communities, each with unique needs and requirements<sup>2</sup>. Others focused on the benefit of using social media platforms in tertiary institution libraries without adequately paying attention to how the librarians can positively improve their digital reference service delivery, particularly in the digitalised era, and how critical thinking skills have enhanced the service provided by librarians in the tertiary institutions, particularly in Ekiti state tertiary institutions, to reach out to their clientele beyond the library four walls. The study, therefore, investigated the influence of social media use and critical thinking skills in promoting digital reference service delivery in Ekiti State tertiary institutions in Nigeria.

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

The study aimed to explore social media use and the level of critical thinking skills librarians possessed when rendering digital reference services delivery in tertiary institutions in Ekiti State, Nigeria. The objectives are to

- i. identify the level of digital reference services delivery employed by librarians in tertiary institutions in Ekiti State, Nigeria.
- ii. examine the frequency of use of digital reference services delivery by librarians in tertiary institutions in Ekiti State, Nigeria.

- iii. identify the level of social media use by librarians in tertiary institutions in Ekiti State, Nigeria.
- iv. assess the level of critical thinking skills of librarians in tertiary institutions in Ekiti State, Nigeria.
- v. determine the influence of librarians' social media use on digital reference services delivery in tertiary institutions in Ekiti State, Nigeria.
- vi. determine the influence of librarians' critical thinking skills on digital reference services delivery in tertiary institutions in Ekiti State, Nigeria.
- vii. determine the influence of librarians' social media use and critical thinking skills on digital reference services delivery in Ekiti state's tertiary institutions.

#### **1.4 Research Questions**

The study investigated the following research questions to understand better the problem discussed previously.

- i. What is the level of digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria?
- ii. How frequently do librarians in tertiary institutions in Ekiti State, Nigeria, utilise digital reference services in their service delivery?
- iii. What is the level of social media use by librarians in tertiary institutions in Ekiti State, Nigeria?
- iv. What is the level of critical thinking skills of librarians in tertiary institutions in Ekiti State, Nigeria?

#### **1.5 Hypotheses**

The following hypotheses were tested at a 0.05 level of significance.

H<sub>0</sub>1: There will be no significant influence of social media use on digital reference services delivery of librarians in tertiary institutions in Ekiti State, Nigeria.

H<sub>0</sub>2: There will be no significant influence of critical thinking skills on digital reference services delivery of librarians in tertiary institutions in Ekiti State, Nigeria.

H<sub>0</sub>3: There will be no combined influence of social media use and critical thinking skills on digital reference services delivery of librarians in tertiary institutions in Ekiti State, Nigeria.

### **1.6 Significant of the Study**

This study is essential to various library and information science stakeholders, particularly in Ekiti State, Nigeria. Investigating the influence of social media use and critical thinking skills of librarians on digital reference service delivery will enhance digital reference service delivery and provide valuable insights into the factors that contribute to the effectiveness and efficiency of these services in tertiary institutions, particularly in Ekiti State, Nigeria. Understanding the influence of social media use and critical thinking skills on digital reference service delivery will help shape training programmes for librarians. By identifying areas where improvement is needed, training initiatives were tailored to enhance the critical thinking skills of librarians and equip them with the knowledge and skills necessary to utilise social media in digital reference delivery effectively.

The study findings will also serve as evidence-based recommendations for policymakers and decision-makers in the library and information science field. The insights gained from exploring the influence of social media use and critical thinking skills on digital reference service delivery will guide the development of policies and strategies that promote the integration of social media platforms and foster the cultivation of critical thinking skills among librarians. The study will also contribute to the existing body of knowledge in digital reference

service delivery, particularly in Ekiti State, Nigeria. Examine the influence of social media use and critical thinking skills of librarians on digital reference service delivery will help the librarians to gain insights and better understand the evolving information-seeking behaviours of users and then tailor their digital reference services to provide timely, accurate, and user-centric support to meet the user's needs and their expectations.

The findings will add to the literature on the use of social media in digital reference services delivery and shed light on the role of critical thinking skills in providing digital reference services. Researchers can build upon these findings to further explore related areas and expand the understanding of this crucial domain.

### **1.7 Scope of the Study**

The study investigated the social media use, critical thinking skills, and digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. There are two independent variables, social media use and critical thinking skills, and one dependent variable, digital reference service delivery. The measures for social media use were the purpose and frequency of use. In contrast, the measures for critical thinking skills were recognition of assumption, evaluation of assumption, and drawing conclusions. Asynchronous and synchronous modes of digital reference were used to measure the dependent variable. The targeted population was librarians in tertiary institutions in Ekiti State.

The study focused on the first five (5) tertiary institution libraries (the oldest institutions in their categories) across three types of tertiary institutions: Federal, State, and Private institutions in Ekiti State, Nigeria. These institutions are Bamidele Olomilua University of Education, Science and Technology Ikere-Ekiti (BOUESTI, 1977), Ekiti State University, Ado-Ekiti (EKSU, 1982), Afe Babalola University, Ado-Ekiti (ABUAD, 2009), Federal University, Oye-Ekiti (FUOYE, 2011), and Venite University Iloro-Ekiti (2021). The tertiary

institutions in Ekiti State are comprised of one federal university, two state universities, and four private universities, from which the sample population is selected. The respondents include librarians from the selected tertiary institutions, including the heads of all five (5) institution libraries chosen for the study. The study employed content analysis for the five (5) heads of the tertiary institution libraries selected for this research.

### **1.8 Limitation to the Study**

The study encountered substantial methodological constraints due to the unforeseen introduction of a new working schedule, which necessitated frequent and repeated researcher visits. This new development consequently impeded the researcher's ability to solicit responses from potential respondents across their respective institutions.

### **1.9 Operation Definition of Terms**

The following variables are operationally defined for this study to ensure clarity and precision in communication.

**Digital Reference Service Delivery (DRSD):** This is a digital means of communicating and delivering services beyond the library's physical boundaries to information seekers. Librarians in tertiary institutions utilise digital reference service delivery to assist users in searching for relevant information in their respective fields, answering inquiries, and conducting research in their comfort zones with synchronous and asynchronous tools.

**The Synchronous Mode of Digital Reference Service Delivery:** Librarians in tertiary institutions in Ekiti State have been using this mode of communication to provide real-time interaction and immediate response to users' queries through phone support, real-time chat, ChatGPT, and social media platforms.

**Phone Support** is the ability of librarians in tertiary institutions in Ekiti State to provide immediate interaction by connecting with users via telephone to answer their queries, offer

relevant information resources, and guide the users in searching and evaluating the source of information.

**Real-Time Chat:** this enables librarians in tertiary institutions in Ekiti State to engage in text-based conversations with users through dedicated platforms or library websites.

**ChatGPT:** allows librarians in tertiary institutions in Ekiti State to use an AI-powered ChatBot to respond immediately to users' queries.

**The Asynchronous Mode of Digital Reference Service Delivery:** Librarians in tertiary institutions can respond to users' queries at their convenience after they have been dropped through email, online forums, text messages, video conferencing, and web-based chat.

**Email** is a communication tool used by librarians in tertiary institutions to send and receive documents and respond to user queries at their convenience.

**Online Forum:** Librarians in tertiary institutions in Ekiti State use this channel to receive users' queries and provide answers from multiple perspectives.

**Text Messages:** librarians use text messages as a communication channel in tertiary institutions in Ekiti State to communicate or interact with communities of users who seek library assistance.

**Video Conferencing:** Librarians use video conferences to schedule appointments for one-on-one online interactions with their users, which are recorded for future use.

**Web-Based Chat:** Librarians set up this website so users can submit their queries and receive responses at their convenience. It also allows library users to access information at their convenience.

**Frequency of Digital Reference Service Delivery:** Librarians in tertiary institutions routinely provide digital reference service to their clientele, which includes daily, weekly, monthly, or occasional use.

**Social Media Use:** This is the channel used by librarians in tertiary institutions in Ekiti State to connect, interact, and disseminate information to a community of users and display their products and service providers' offers in their institution's library.

**Purpose of Use:** Librarians in tertiary institutions in Ekiti State use social media platforms to connect with the broader community of users

**Frequency of use:** Librarians in tertiary institutions in Ekiti State frequently use social media platforms to connect with a community of users and make provision for digital reference services delivery.

**Critical Thinking Skills:** This is the ability to reason or think creatively, which librarians in tertiary institutions in Ekiti State possess.

**Recognition of Assumption:** is the ability of librarians in tertiary institutions in Ekiti State to use critical thinking skills to identify underlying beliefs, ideas, or attitudes that may influence their interpretation or response to users' queries.

**Evaluation of Assumption:** This is the ability of librarians in tertiary institutions in Ekiti State to think critically to identify information's credibility, reliability, accuracy, and relevance to the users' queries.

**Draw Conclusion:** This is the ability of librarians in tertiary institutions in Ekiti State to think critically and synthesise, analyse, and interpret users' queries before answering them.

**Librarians:** These professionals work in tertiary institution libraries in Ekiti State, assisting users by making information resources available and accessible to their clientele in a digital format.

## Endnotes

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## **Chapter Two**

### **Literature Review**

#### **2.1 Conceptual Review**

This chapter comprehensively reviews the literature on the influence of social media use and critical thinking skills in librarians' digital reference service delivery in tertiary institutions in Ekiti State, Nigeria. It critically assesses the impact of librarians' social media use in providing digital reference services, explores how globalization and technological advancements have transformed digital reference service delivery in tertiary institutions, and emphasises the importance of critical thinking skills in fulfilling their responsibilities. This chapter reviewed relevant literature concerning the topic chosen.

#### **2.1 Conceptual Review**

2.1.1 Digital Reference Service Delivery (DRSD)

2.1.2 Social Media Use (SMU)

2.1.3 Critical Thinking Skills (CTS)

#### **2.2 Theoretical Framework**

2.2.1 Diffusion of Innovation Theory (DoIT)

2.2.2 Uses and Gratification Theory (U&GT)

2.2.3 RED Critical Thinking Model (RED Model)

#### **2.3 Review of Empirical Studies**

2.3.1 Social Media Use and Digital Reference Service Delivery

2.3.2 Critical Thinking Skills and Digital Reference Service Delivery

2.3.3 Social Media Use, Critical Thinking Skills and Digital Reference Service Delivery

#### **2.4 Conceptual Model**

#### **2.5 Summary of Literature Reviewed**

#### **Endnotes**

### 2.1.1 Digital Reference Service Delivery (DRSD)

Digital Reference Services Delivery (DRSD) provides librarians services through digital channels like chatbots, email, text messaging, and social media platforms<sup>1</sup>. It is an electronic mode of communicating library service through digital methods, whether the user is in an urban centre or a remote area. This mode of electronic service delivery enables library clientele to access library resources and expertise remotely, at any time, and from any location within an internet collection<sup>2</sup>. Digital reference services have been used interchangeably with Virtual Reference Services (VRS), Online Reference Services (ORS), and e-reference service delivery<sup>1</sup>. The DRSD, also known as “e-reference service delivery,” plays an unprecedented role in providing pinpointed, exhaustive, expeditious service to its information seekers whenever they query. In this context, social media platforms, mobile telephone support, e-mail, instant messages, and the dark web are the technological tools that enable the DRSD to deliver easy service to library patrons, irrespective of location. This study will delve into the specific role of social media in the DRSD, exploring its benefits and potential challenges.

Digital Reference Service Delivery (DRSD) is also viewed as a way of contacting librarians through telephone or other communication channels and requesting information needs with feedback at the right time<sup>3</sup>. It is an internet-based query-and-answer service that connects users with librarians or reference librarian experts with specialized subjects or skills<sup>4</sup>. This service requires access to electronic devices such as computer systems, smart TVs, and smartphones like Android and Apple phones, which would use the internet to retrieve and disseminate information through email, video conferencing, and social media platforms of information seekers<sup>5</sup>. That is, DRSD is a virtual library that breaks the barriers or obstacles between the librarians and information users who cannot physically access the library<sup>6</sup>.

Some scholars see DRSD as a collaboration between library users and librarians or reference librarian experts through Internet facilities<sup>7</sup>. One of these scholars explains that other communication channels used by librarians, such as web forms, chatbots, video conferencing, Voice over Internet Protocol (VoIP), Ask Librarians, and librarian robots, among others, have improved the service of librarians<sup>8</sup>. Other scholars see the virtual library as a high network of expertise, human intermediation, and resource sharing available at the users' disposal in an online environment. It is a technique that employs technological tools wherever possible by allowing librarians to concentrate on answering queries with adequate security for their clientele<sup>9</sup>. This is why it is called “remote communication” between librarians and library users to make inquiries and find the solution to the user's inquiries, even in a remote area<sup>9</sup>. Therefore, digital reference services utilize computer technology systems to share the same objective, disseminate information, and the internet to facilitate the delivery of human intermediation at a distance<sup>10</sup>.

Similarly, DRSD is the system of moving from being young to mature<sup>11</sup>. It is an online computer-mediated services transaction medium that protects the security of marginalized groups who do not have access to physical libraries and gives them a sense of belonging in a virtual service delivery system<sup>12</sup>. It is also the process of establishing personal contact between users and their information resources through electronic gadgets and internet connections. The virtual service delivery has been described as a concise library that dishes out relevant information needed at a particular time. It is an essential service that is not only confined to the library but also includes remote users<sup>13</sup>. Digital reference service is a personal service rendered by librarians to meet the urgency of information users almost accurately within a short time. It is a service that helps with resource sharing and answers to queries of the information users,

researchers, and others that they might need as their necessity and demand promptly. Therefore, DRSD is a form of preserving, sharing, and properly disseminating information using smartphones, laptops, smart TVs, e-mail, web forms, instant messaging, and other social media platforms.

Digital reference service is a personal assistance service that supports users who find online tools and resources unfamiliar, challenging to learn, or insufficient to answer their information needs. It enhances user experience, increases accessibility, and improves the overall effectiveness of library services<sup>14</sup>. The provision of reference services delivery involves collaboration between library users and personnel in computer-based systems and smartphones to transact with each other<sup>15</sup>. A channel allows users to access reference assistance from any location at their convenience through digital devices<sup>16</sup>. Furthermore, DRSD utilizes digital platforms for remote, technology-mediated delivery of reference services to users anytime, anywhere through synchronous or asynchronous modes of communication. It represents the evolution of traditional in-person reference to online environments.

### **2.1.2 Social Media Use**

Social media is an online tool that offers social interactions, exchange of ideas and thoughts, and dissemination of information products and services between/and or among users with the same interests. Social media is a tool for transmitting ideas, thoughts, or information between one another and understanding through interaction; in other words, it is the act of sharing or exchanging information, ideas, or feelings<sup>17</sup>. In addition, it is a tool that librarians can use to promote their products and render library services to maintain relevance in this information age because it is a new media for effectively promoting the library and its services<sup>18</sup>. Social media

is a means of virtual communication where the exchange of ideas, information, and thoughts occurs within the confines of information seekers. It is an online tool used to receive, retrieve, and disseminate information to the appropriate community of users. Librarians are also not left out in using social media to promote their products online and render library services to information seekers to maintain relevancy in the age of globalization.

Furthermore, SMU is a medium of communication that connects librarians to their users, irrespective of their domain and builds relationships with them<sup>19</sup>. Social media use provides opportunities for users, particularly in tertiary institutions, to access information anytime, anywhere in the world. Thus, globalisation and digitalisation have reconceptualised the library from being “a physical library to a library in the pockets or beyond the wall,” particularly with the aid of social media platforms. Library Beyond Walls or Library in the Pockets has been referred to as library services and information resources available 24 hours, seven (7) days a week, on any device since it can connect to the internet<sup>20</sup>.

Social media are the channels that provide opportunities for tertiary institution libraries to promote their reference services delivery and connect with numerous users, with effective use of strategic planning and skills development. It has found that over 50% were active on Facebook and Twitter<sup>17</sup>. Another study posited that WhatsApp, Facebook, and Twitter were highly utilised among librarians and library users in tertiary institution libraries<sup>21</sup>. Due to its advantages, observations show that some tertiary institution libraries have embraced SMU in their library services delivery globally. Social media is a vital tool that helps librarians generate, disseminate, exchange, and share reference information resources and gather knowledge<sup>11</sup>. Social media are used for marketing reference sources and services, announcing news, and

displaying their reference collections<sup>22</sup>. They are platforms to share information, promote and market the library and its information resources, improve reference services delivery, and interact with their users<sup>23</sup>.

### **2.1.3 Critical Thinking Skill (CTS)**

Digital reference service delivery has been crucial in supporting teaching, learning, and research activities, particularly in tertiary institutions. The advent of technology has made librarians brace up for prompt service delivery to their clientele with the ability of critical thinking skills (CTSs). Thus, CTS is the ability to analyse, evaluate, and synthesise information to make informed decisions and effectively solve information seekers' challenges and requests<sup>24</sup>. In the library context, critical thinking involves assessing information sources' relevance to the clientele to answer user queries<sup>25</sup>. It is the ability to interpret, evaluate, and analyse facts and information available to form a judgment or decide if something is right or wrong<sup>26</sup>. One of the scholars posits that critical thinking skills are a problem solver through rational, logical, and evidence-based thinking and making reasoning judgments on the request of their users<sup>27</sup>. It is essential for developing new knowledge, improving research and presentation skills, and promoting creativity and problem-solving. It explains that critical thinking skills are necessary skills that librarians need to acquire to solve digital reference services delivery challenges<sup>11</sup>.

Critical thinking skills are essential for librarians to develop a deep understanding of issues and make sound decisions in their personal and professional lives<sup>28</sup>. It involves skills such as interpretation, analysis, evaluation, inference, explanation, and self-regulation, which enable librarians to approach problems and issues with a clear and rational mindset and avoid the pitfalls of biased thinking, logical fallacies, and uncritical acceptance of information<sup>26</sup>. CTS is

the ability to question assumptions, recognize biases, and make informed decisions based on evidence and reasoning<sup>29</sup>. It also entails considering alternative perspectives, effectively communicating ideas and conclusions, a knack for neutrally analysing and appraising information and ideas, and squabbling logically and systematically<sup>30</sup>.

Critical thinking is applying, analysing, synthesising, and evaluating collected information and knowing one's thought process and what one tries to do or achieve<sup>14</sup>. It is reflecting upon what has happened and considering ways to improve<sup>31</sup>. It is also the ability to skillfully and actively process intellectually, conceptualizing, applying, analysing, synthesising, and evaluating information gathered from or generated by observation, experience, reflection, reasoning, or communication as a guide to belief and action<sup>32</sup>.

Critical thinking skills can be seen as "thinking about thinking"<sup>33</sup>. It effectively deals with users' social, scientific, and practical problems<sup>34</sup>. It equips librarians with problem-solving skills to make effective decisions by identifying information sources, analyzing their credibility, reflecting on whether it is consistent with prior knowledge, and drawing conclusions<sup>35</sup>. It is the ability to recognise assumptions, identify underlying beliefs or attitudes in the information accessed, and critically evaluate its validity and relevance to library users. CTS entails identifying and challenging assumptions, recognizing biases, and considering alternative perspectives<sup>37</sup>. It is the skill or knowledge of using evidence and logical reasoning to support recognition, assumptions, evaluation, and make rightful decisions, as well as being open-minded and willing to revise one's beliefs in light of innovation<sup>36</sup>. Furthermore, it is based on the competencies of librarians to think creatively and innovatively, generate new concepts, develop new knowledge, and find solutions that may not be immediately obvious<sup>37</sup>. It

comprehends a range of cognitive competencies that enable librarians to analyze, evaluate, and synthesise information logically and rigorously and think creatively and innovatively.

The conceptualisation of social media use, critical thinking skills, and digital reference services delivery of librarians in tertiary institutions encompass the purposes and frequencies of social media use, the attitude of librarians and patrons, and gratification derived from social interaction, feedback, and motivation. This framework provides a comprehensive understanding of the factors influencing the innovation, adoption, and implementation of social media and critical thinking skills for digital reference service delivery in tertiary institutions libraries.

The purpose of librarians' use of social media in tertiary institutions is to provide effective digital reference services to their patrons. This includes responding to inquiries, providing research assistance, and displaying and promoting library resources and services<sup>38</sup>. Librarians' frequent use of social media platforms varies depending on the volume of inquiries and the level of engagement with library patrons. Some use them daily, while others use them weekly, monthly, or less frequently but consistently<sup>39</sup>. In the presence of gratification, the motivation that librarians receive from the management and the excellent feedback from their clientele make them more enthusiastic about using social media to provide digital reference service delivery. Feedback is the warm appreciation librarians receive from their clientele regarding the quality and effectiveness of their digital reference service delivery.

Meanwhile, patrons seek input and guidance from librarians on their information needs. Social media allow for the seamless exchange of feedback, enabling librarians to access and improve their services based on the patrons' input. Librarians and patrons derive motivation for using

social media for digital reference service delivery<sup>40</sup>. They also feel motivated by the opportunity to assist their patrons by contributing to their academic success or research purpose. In contrast, library patrons feel motivated by the timely and helpful responses they receive, leading to a sense of accomplishment and empowerment<sup>41</sup>. Also, Social Interaction: Both librarians and patrons use social media for digital reference service delivery to engage in social interaction, discussion, and collaboration. Social media platforms facilitate real-time communication and interaction between librarians and patrons, leading to exchanging ideas, information, and feedback.

Librarians in tertiary institutions use the synchronous and asynchronous modes of digital reference delivery to serve their clientele in a digital environment. An asynchronous mode of digital reference service delivery is a mode of communication that occurs with a time delay and does not require immediate response<sup>10</sup>. This mode of communication allows library patrons to seek assistance at their convenience without needing to be present or available in real-time. Some common types of asynchronous digital reference service delivery include email, video conferencing, text messaging, and others.

An email-based digital reference service involves library patrons sending inquiries via email and librarians responding to these inquiries asynchronously. Users typically provide detailed information about their information needs in their emails, allowing librarians or reference librarians experts to craft comprehensive responses. This mode offers both library patrons and personnel flexibility as they can respond conveniently. Email services often include features such as auto-replies to acknowledge receipt of inquiries and maintain communication transparency<sup>42</sup>.

Online forums dedicated to digital reference services provide a platform for patrons to post queries, which are then address by librarians or reference librarian experts. These forums facilitate asynchronous communication, allowing library patrons to access responses conveniently. Library patrons can also benefit from the collective knowledge of the forum community, as multiple perspectives may be offer in response to a single query. Moderators oversee discussions to ensure relevance and adherence to community guidelines<sup>43</sup>.

A text message-based digital reference service enables users to send brief inquiries via SMS, with librarians or reference librarians' experts responding asynchronously. This mode caters to users who prefer quick and concise interactions. Librarians can provide brief answers or guidance within the limitations of text messaging. Additionally, text message services may utilise automated responses or chatbots to handle common queries and provide immediate assistance<sup>44</sup>.

Video conferencing for digital reference service allows users to schedule appointments for one-on-one consultations with librarians. During these sessions, library patrons can engage in real-time discussions and receive personalised assistance tailored to their information needs. While video conferences are synchronous by nature, they can also be recorded for later reference, enabling asynchronous access for librarians unable to attend live sessions. Librarians may utilise screen sharing and collaborative tools to enhance the consultation experience<sup>45</sup>.

Web-based digital reference service encompasses various online platforms, such as chat widgets embedded on library websites or dedicated digital reference portals. Library patrons can initiate chat sessions with librarians, submitting inquiries and receiving responses in real time or asynchronously, depending on librarian availability. Web-based services often feature

knowledge bases, FAQs, and tutorials to supplement live assistance, allowing library patrons to access information independently<sup>46</sup>.

The synchronous digital reference services delivery modes cater to diverse user preferences and information needs, offering flexibility, accessibility, and personalized assistance. The synchronous digital reference services delivery modes offer immediate assistance and real-time interaction, catering to users' needs for timely information access and support. It provides services such as phone support, social media, real-time chat, and among others.

Phone support for digital reference service delivery involves users contacting librarians via telephone to seek assistance with their information needs<sup>47</sup>. Librarians provide real-time responses and guidance over the phone, addressing user queries and offering relevant resources or referrals. This mode allows for immediate interaction and verbal communication, enabling librarians to clarify inquiries and provide personalized assistance<sup>48</sup>.

A real-time digital reference service enables users to engage in real-time text-based conversations with librarians through dedicated chat platforms or embedded chat widgets on library websites. Library patrons can submit inquiries and receive immediate responses, facilitating quick access to information and assistance. Librarians utilise chat transcripts to document interactions and follow up on librarians' inquiries as needed<sup>49</sup>.

Chat GPT refers to using AI-powered chatbots, such as OpenAI's GPT-based models, to provide digital reference service. These chatbots simulate human-like conversations and can autonomously respond to library patrons' inquiries based on pre-trained knowledge and algorithms<sup>40</sup>. Chat GPT services offer instant access to information and assistance, operating

24/7 without human intervention. Librarians may oversee chatbot interactions and intervene when necessary to ensure accuracy and user satisfaction<sup>50</sup>. Additionally, social media platforms serve as channels for synchronous digital reference service delivery, allowing patrons to connect with librarians and access assistance in real-time. Librarians maintain active social media accounts where users can submit inquiries via comments, direct messages, or live chat features. Librarians follow up on social media channels to respond promptly to user queries, share relevant resources, and engage with the community. Social media enhances accessibility and outreach, reaching library patrons online<sup>51</sup>.

Nevertheless, librarians must acquire critical thinking skills for effective digital reference service delivery to recognise assumptions, evaluate assumptions and draw conclusions. Recognising assumptions is crucial for librarians to identify underlying beliefs, ideas, or attitudes that may influence their interpretation of information on social media platforms. Recognising assumptions enables librarians to approach digital reference inquiries with a critical mindset, questioning the validity and reliability of the information accessed<sup>52</sup>. Evaluation of information is also a fundamental aspect of critical thinking skills that enables librarians to assess the credibility, relevance, and accuracy of information obtained from social media platforms. As digital reference service delivery relies on online resources, it is essential for librarians to critically evaluate the information before sharing it with library patrons and ensure it meets the standards of academic integrity and reliability<sup>53</sup>.

This skill enables librarians to ensure that the information they recommend to library patrons is accurate, trustworthy, and relevant to their needs. Draw conclusion is the fundamental aspect of critical thinking that enables librarians to synthesize, analyse, and interpret the information

gathered from social media platforms to provide informed responses to digital reference inquiries. Drawing logical and well-supported conclusions, librarians can ensure that shared information aligns with their parent institutions' academic needs and standards policies. Hence, the RED critical thinking skills are indispensable for librarians utilising social media platforms for digital reference service delivery in tertiary institutions in Ekiti State. These skills empower librarians to think critically about digital information, ensuring the delivery of accurate and reliable information to support the academic pursuit of their library patrons<sup>54</sup>.

## **2.2 Theoretical Framework**

The study is underpinned by three (3) theories: Uses and Gratification Theory (U&GT), the Critical Thinking Model (RED), and the Diffusion of Innovation Theory (DoIT). It illuminates the influence of social media use and critical thinking skills on digital reference service delivery by librarians in tertiary institutions in Ekiti State, Nigeria.

### **2.2.1 Diffusion of Innovation Theory (DoIT)**

Diffusion of Innovations theory seeks to explain how innovations are adopted by society. An innovation is an idea, behaviour, or object perceived as new by its audience. Diffusion of Innovations offers three valuable insights into the process of social change: qualities that make an innovation spread successfully, the importance of peer-to-peer conversations and peer networks, and understanding the needs of different user segments. Diffusion of Innovations stands apart from other theories because of its unique approach to change. Unlike most other theories that persuade individuals to change, it sees change as primarily about the evolution or "reinvention" of products and behaviours. This approach ensures that innovations better fit the

needs of individuals and groups, leading to widespread adoption. Reinvention is a critical principle in the Diffusion of Innovations. Innovation's success depends on how well it evolves to meet the needs of increasingly demanding and risk-averse individuals in a population.

The diffusion of innovation theory is a social science theory that describes the spread of new ideas, behaviours, and products among people. Everett Rogers (1962) developed the theory, defining diffusion as a significant communication channel conceived with new ideas, where the participants create and share information with more people for mutual understanding and benefits in the social system. That is, diffusion of innovation theory is a simple random conception of human communication that describes a paradigm shift from the traditional method of doing things by embracing new techniques to give such events more comprehensive coverage. The critical apparatuses of diffusion of innovation are to be included in innovation, communication channels, and social systems. Diffusion of innovation theory has been characteristically divided into innovation, communication channels, time, and adopter. Innovation is adopting new ideas, behaviours, or perceived new strategies that are different from the existing ones. This explains the embracing of new ideas and skills in the field of library science, where the librarians rebrand their reference services delivery and break the obstacles of library walls. Communication channels are the means of transmitting information about innovation or ideas between and among users. These channels process and transmit information to users through mass media, social media platforms, text messages, and other search engines. For example, librarians transmit and disseminate information to their community users through social media platforms, e-mail, and video charts in library science. This medium can also create awareness about librarians' digital reference service delivery to

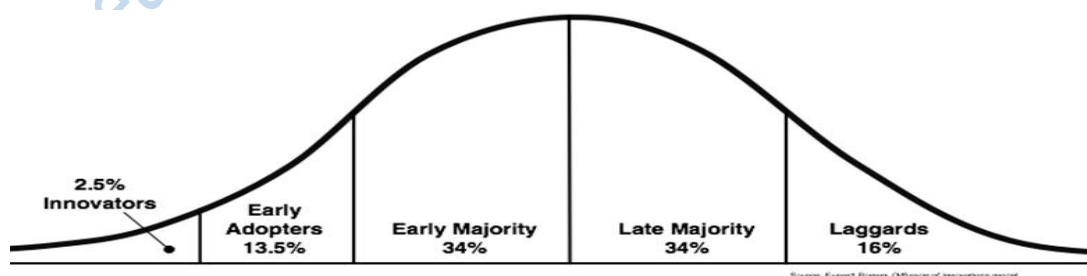
their potential users, particularly lecturers, students, and researchers, whose recommendations encourage others to use the digital reference service.

Time is when the new idea is perceived and adopted to promote a mode of communication. Time has been characterised as different stages when the awareness, interest, evaluation, trial, and adoption of new ideas diffused worldwide<sup>55</sup>. The construct of time goes with the frequency of use and the time it takes to provide this service to various groups of users. While DRSD has been around for a significant amount of time, its adoption rate among tertiary institutions worldwide varies. So, it is possible to measure the acceptability and use of each DRSD against the time they were adopted. The new DRSD can be examined based on the accepted time. That means it is not concerned about the time of its creation but the time of adoption and usage<sup>56</sup>. Although librarians of tertiary institutions do not perceive providing access to digital reference service delivery as a new idea, the creation and use of synchronous and asynchronous systems practices and ideas are perceived as new<sup>57</sup>.

Lastly, adopters are individuals or groups who accept and use innovation in various fields. Adopting a new idea, behaviour, or product (i.e., "innovation") does not happen simultaneously in a social system. Instead, it is a process in which some people are more apt to adopt the innovation than others. So, people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is essential to understand the characteristics of the target population that will help or hinder the adoption of the innovation. The adopters have been further classified based on their level of innovativeness, ranging from early adopters to laggards.

Furthermore, the first categories of innovators are early innovators or triers who want to be the first to try the innovation. These people are venturesome, interested in new ideas, and ready to take risks to develop new ideas. The early adopters represent opinion leaders, enjoy leadership roles, and embrace change opportunities. They are aware of changes and eager to adopt innovation, new ideas, or new techniques without conviction. The second category of innovation is the early majority. The early majority are rare leaders who study the situation before adopting innovation. They typically need to see evidence and be convinced that the innovation works before adopting new techniques. Strategies to appeal to this population include success stories and proof of the innovation's effectiveness. Late Majority is another category that is sceptical of change.

They only accept new ideas, behaviours, and techniques after they have been tried and accepted by the majority. Strategies to appeal to this population include information on how many others have successfully tried and adopted the innovation. Laggards, the last category of adopters, are people bound by tradition and conservative. They are very sceptical of change and are the most challenging group to bring on board for innovation. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups<sup>58</sup>. The illustration below explains this category further.



**Figure 2.1 Rogers Diffusion Curve (Diffusion of Innovation Theory)<sup>59</sup> .**

According to the diagram above, it is estimated that about 2.5% of innovators are ready to change the communication medium and break the barriers to delivering reference services. The early adopters who should be referred to as risk takers and bearers are about 13.5%. This group is ready to adapt to new things without hesitation. The early majority is a group of people that needs proof before embracing new ideas or behaviour. It is estimated that about 34% are in this category. The late majority is another group that accepts a new idea or technique after seeing the positive effect of innovation. This group accounts for 34%, while laggards' adopters are stone-minded and very conservative. This group has been estimated to be 16%, and they are not ready to change their norms and traditions in exchange for new techniques or communication channels.

Understanding the dynamics of these elements is crucial in comprehending the factors that shape the adoption and implementation of digital reference services in tertiary institution libraries. The diffusion theory emphasises that the views and perceptions of adopters play a pivotal role in their decision to embrace or reject an innovation. In digital reference service delivery, how librarians perceive synchronous and asynchronous modes of digital reference service delivery will ultimately determine whether they integrate the technologies into their service delivery.

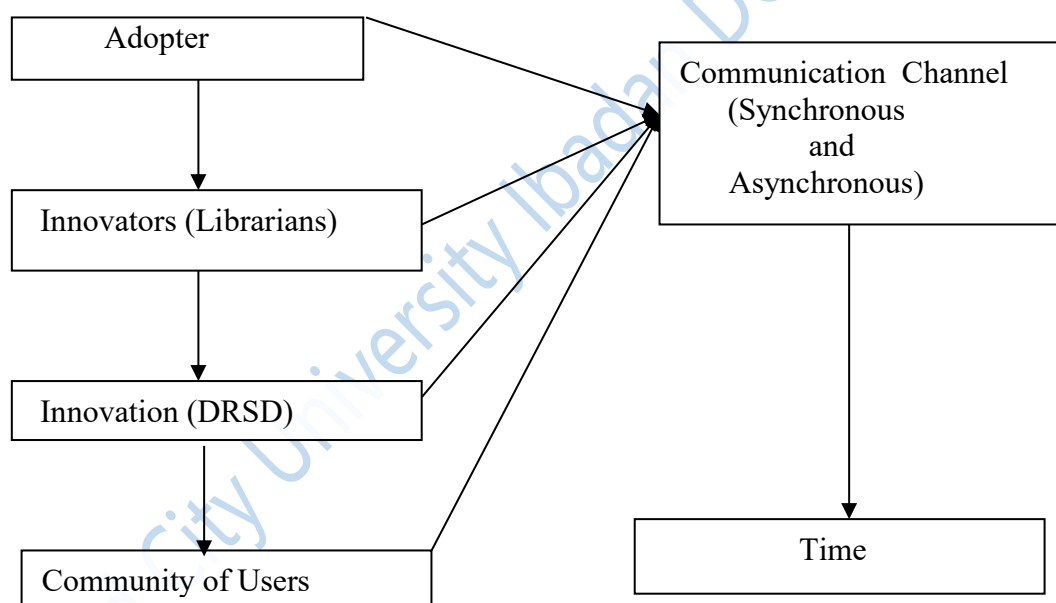
The diffusion of innovation theory (DoIT) principle has been adopted to explain librarians' new communication channels and information dissemination through synchronous and asynchronous communication. Synchronous and asynchronous is the innovation (the new idea) librarians use to share, disseminate, receive, and respond to their users' queries. Synchronous

and asynchronous communication such as email, instant messaging, Voice over Internet Protocol (VoIP), video conferencing, and social media platforms are used as channels to interact with the users. The response time to user queries is peculiar, either in real or off time. The existence of e-mail, voice-over-internet protocol, instant messaging, forums, video conferencing, real-time chat, phone support, and social media platforms has promoted a paradigm shift in the provision of DRSD in tertiary institutions. These innovations have significantly influenced a new technique to reference service delivery on tertiary institutions' libraries and make libraries accessible to all community users, irrespective of location.

The relevance of this theory to the use of digital reference service delivery in delivering and disseminating information through new modes of communication has promoted the line of usability, interface, and quality of the content and popularised the use of digital reference service delivery to the broader community<sup>60</sup>. The theory also explains other new techniques librarians adopt, such as Facebook, TikTok, Spotify, WhatsApp, thread, Telegram, and YouTube. This social network is a comprehensive framework for understanding innovation diffusion in library science<sup>61</sup>. The theory explains how, why, and at what rate new ideas, practices, technologies, and innovations are adopted and promote the delivery of digital reference services worldwide<sup>40</sup>. For instance, librarians serve as adopters or innovators, categorised as early adopters in revolutionising the traditional method of reference service delivery to digital. The criterion for the adopter categorisation is innovativeness, defined as the degree to which an individual adopts a new idea.

The principle of innovation theory positions digital reference service delivery as an innovation undergoing the innovation-diffusion process within tertiary institution libraries. The tertiary

institutions, particularly in developing countries, have adopted the innovation-diffusion process through synchronous and asynchronous means of communication, transmission, sharing, and delivery of reference service. DRSD is relatively easy to adopt as an innovation in information access because of its flexibility. It can also be tailored or modified to suit the needs of tertiary institution libraries and their clientele. It is a comparative advantage to reference services within libraries since the queries and answers can be asked and provided through electronic or physical systems<sup>62</sup>. Below is an illustration of how the innovation-diffusion process aids the dissemination of information in tertiary institutions.



**Figure 2.2.2 Redefined DoI for Digital Reference Services<sup>63</sup>.**

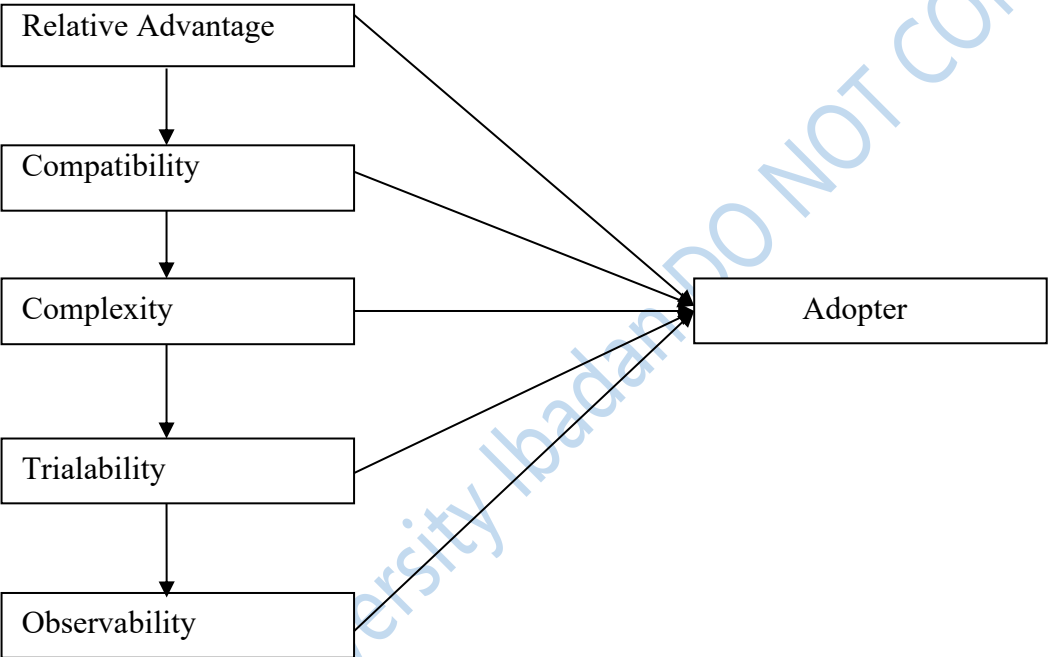
The diagram above provides a detailed analysis of how librarians and community users adopted the new wave of technology to promote reference service delivery across their tertiary institutions. The waves of technology started with adopters (librarians) who embraced the latest

web of technology to satisfy users' needs. Librarians adopted the innovation of technology through synchronous and asynchronous communication channels to break the barriers of the library's four walls and effectively reach out to library users irrespective of their locations. However, most tertiary institutions adopt a new wave of technology to promote reference service delivery in different time zones.

Additionally, adopting innovations is influenced by five attributes: relative advantage, compatibility, complexity, trialability, and observability<sup>64</sup>. These attributes significantly shape the adoption and implementation of digital reference services in tertiary institution libraries. The relative advantage attribute refers to how librarians perceive innovation over traditional methods, believing that innovations for easy reference service delivery and information dissemination are likely to be adopted quickly. Compatibility relates to how well an innovation aligns with the reference sections and understanding the challenges facing traditional methods of reference service delivery. Complexity is the challenge of comprehending the innovation and its application in reference service delivery. Sometimes, the complex nature of innovation may lead to its slow adoption. Trialability explains the accessibility of an innovation to be experimented with by librarians in promoting digital reference service delivery. For example, most libraries have experimented with and developed online reference service delivery or library on wheels for the convenience of their community users. It has been discovered that online reference service delivery breaks the barriers of traditional service delivery.

Finally, observability depends on the visibility and availability of innovation to librarians. For instance, librarians observe that adopting innovation through synchronous and asynchronous is a convenient medium where library users and personnel send and answer queries without

physical contact. Within digital reference service delivery, synchronous and asynchronous have precipitated a revolution in tertiary institution libraries. This paradigm shift has created a mutually supported framework between librarians and their users. The Diffusion of Innovation Theory (DoIT), presented diagrammatically in Figure 2.3.2, provides a conceptual framework to understand the adoption process of digital reference services in tertiary institutions.



**Figure 2.2.3: Diffusion of Innovation Theory** <sup>74</sup>.

Diffusion of Innovation Theory (DoIT) plays a crucial role in spreading information and influencing the adoption of digital reference services through synchronous and asynchronous (Email, real-time chat, social media platforms, text messages, and phone calls), both online and offline serve as channels through which librarians and their users interact, communicate, share, disseminate, received queries and answers<sup>65</sup>. Librarians used these networks by engaging with users on social media platforms, hosting online forums, and participating in relevant discussions and communities. By leveraging the power of social media platforms, librarians

amplify their visibility and reach out to their community users. Online communities, such as library forums and seminars, allow librarians and users to exchange information and experiences related to their field of interest. This fosters a sense of community and encourages collaboration among adopters, ultimately facilitating the diffusion of digital reference services<sup>23</sup>.

However, despite the benefit of adopting innovation to develop library services, particularly in reference service delivery, the slow pace of digitalisation of reference sections across tertiary institutions, especially in Nigeria, has made it difficult to have a library in the pocket. Several challenges have been identified, such as epileptic power supply and a complacent attitude toward synchronous and asynchronous as an innovation to the reference service delivery, inadequate provision of internet, and lack of professional training on the use of synchronous and asynchronous stand as obstacles to the adoption of innovation. Some scholars have classified Nigerian tertiary institutions as laggard adopters. Though they are not conservative, the inability to meet the standard of expectation has made them remain adamant about adopting new techniques, which made them continue to rely on traditional methods of reference service delivery. This resistance to change has impeded the transformation of reference service sections and promoted the conventional method, which continues to serve as an obstacle for community users to have a library at their hands or pockets.

Aside from this, the theory's assumption is also criticised for being myopic and focused only on the technology process embraced by a small group of people in society. The theory has also been criticised for promoting inequalities and inequities with an inadequate capacity to measure the adoption rate of innovation. Still, it focuses on favouring wealthy people and cares

less about rural communities' people. The theory has also been accused of promoting inefficiency and negligence that made the community users and librarians focus more on the pleasure of technology.

### **2.2.2 Uses and Gratification Theory (U&GT)**

The Uses and Gratification Theory (U&GT) is one of the significant theories that measure the consumption level behind the use of social media. It explains the purpose of social media use and the gratification derived from being used frequently. The theory was first developed in the 1940s as communication scholars began to study why individuals use specific media and content. The theory further expanded in the 1970s and focuses on the gratification media regarding the rationale behind the people choosing media and its gratification. As time passes, attention has shifted away from the consumption of gratification, and more attention has been paid to the benefits and outcomes of media use.

Today, the uses and gratification theory remains one of the most prevalent theories in social media research. Some scholars argue that the rise of new media makes the use and gratifications theory more critical than ever, as this perspective is beneficial for explaining why people adopt social media as an innovation in digital reference service delivery<sup>66</sup>. This is because Social Media Use (SMU) has become a part of our daily life as individuals make use of social media for different purposes such as watching short films, reading news, chatting or viewing comments, listening to music, marketing resources, and displaying product/services, dissemination of information and many more. This is because it brings us a form of gratification due to the motivation behind social media usage. Individuals specifically choose the social media platform that will satisfy their wants, information desires, or needs<sup>7</sup>.

Meanwhile, the Uses and Gratification Theory also asserts that individuals use media to gratify specific needs or desires and also seem to play an active role in choosing and using social media platforms. It believes that users have control over media consumption and characterise them as active and motivated in selecting their needs<sup>67</sup>. That is why U&GT is relevant to this study: it will bolster the researcher's intention of showcasing social media use by librarians in tertiary institutions in Ekiti State, Nigeria.

Librarians have widely adopted the U&GT principle to scrutinise users' satisfaction with SMU and how it affects cognitive and affective needs, social interaction, communication, and information sharing. This is because U&GT focuses on the media users rather than the media itself or the messages the media conveys and sees people as active users. The theory was used to measure librarians' motivation in social media use and how they derived their satisfaction in social media use with specific gratification<sup>68</sup>. The Uses and Gratification Theory originated in media communications as a better model for developing scales and measurements for SMU. Librarians adopt this theory to explain the level of satisfaction derived by their information seekers through their more comprehensive coverage<sup>69</sup>. This is because librarians see social media as essential coverage for digital reference service delivery in sharing, retrieving, disseminating information, and marketing library information resources.

Use and Gratification Theory is based on two significant principles regarding the use of social media in digital reference service delivery. First, it explains how social media changes the narrative of reference service delivery from traditional to modern ways. Secondly, librarians use various social media platforms to reach more comprehensive users, and they rely on their knowledge of motivations to choose specific social media platforms that will help them meet

the information needs of their users<sup>70</sup>. The adoption of U&GT by librarians across the tertiary institutions reorganized the reference service delivery activities and broke the wall barriers of the library to the library in the pockets. The theory gives librarians leverage to use social media platforms and other computer-mediated communications to improve their user's service network and provide relevant information to their clientele. Library users also have the advantage and freedom to actively seek assistance, navigate the library website, comment, and send their requests or queries to the librarians. Librarians also answer users' queries, link the users with relevant information, share library activities, and more that will motivate and benefit the users.

Therefore, SMUs do not only reshape the way librarians provide, gather, retrieve, share, disseminate, and deliver information and their service to their users but also change the existing relationship between library users and librarians. Both librarians and users derive satisfaction in SMU, including cognitive, affective, personal integrative, social integrative, tension release, and medium appeal. For this reason, social media has become a fertile research field that demonstrates the direct relevance of the U&GT and its participants. In the review of the related studies, the researcher synthesised and examined the works and asserted that the majority of librarians use social media to interact, kill time, self-development, meet people, socialise, share information, answer users' queries, surveillance, display library resources, disseminate and delivery of library services<sup>74</sup>. These assumptions clearly show that U&GT is highly relevant in explaining the significance of social media use in the study of digital reference service delivery. It gives librarians a more comprehensive coverage of platforms to promote digital reference service delivery, interpreting and analysing the users' queries and

navigating the internet to search for information that will meet users' needs. As a result, social media use has eased the tension of librarians in their service delivery activities.

Furthermore, U&GT has demonstrated its relevance in several ways in social media use (SMU) in providing digital reference service delivery. Firstly, the U&GT recognizes social media users as active participants who seek assistance to fulfill their specific information needs through various synchronous and asynchronous digital reference service delivery modes, such as chat, text, or social media platforms. This aligns with how librarians actively engage on social media to provide users with information and services, ultimately gratifying their professional needs<sup>71</sup>. Secondly, the U&GT emphasizes that the initiative to link need and gratification lies with the audience. This is reflected in the way librarians take the initiative to address their research needs by selecting appropriate channels for receiving users' information, such as email, WhatsApp, telephone calls, or video conferencing. Librarians choose social media platforms that allow them to gratify their needs around information sharing, service delivery, and learning.

Librarians complement social media platforms with other search engines like Google to satisfy users' information needs. The unprecedented role of technology has given librarians leverage to understand users' needs and when and how they want their queries answered and delivered at the appropriate time. Derivation of users' community goals allows librarians to assess user satisfaction with social media use through surveys to determine the accessibility of information seekers to digital reference service delivery on their various platforms. The accessibility survey has been measured through learning, feedback, comments, and collaboration. Also, suspend value judgments about the significance of tertiary institution library parents must objectively

understand how and why librarians adopted social media platforms for digital reference service delivery and how and why library users choose various social media platforms to fulfill their needs before assessing the significance of channels to service delivery.

Aside from this, the U&GT also demonstrated its importance in explaining further how the library community users and personnel psychologically and motivationally used social media to exchange information and reduce academic stress in five different ways, each with cognitive needs, affective needs, personal integrative needs, social integrative needs, and tension release needs. The librarians used social media channels such as Twitter, Facebook, WhatsApp, TikTok, and other blogs to deliver digital reference services and satisfy their users' emotional needs. Librarians have used all these media to provide relevant information and other library services, keep them updated about new service developments, and provide information resources to enhance professional knowledge of their users' needs<sup>72</sup>.

Regarding personal integrative needs, librarians use social media to display their personal integrative needs, such as integrity, status, credibility, and competencies in their chosen field. They share research-related content, such as curating engaging content for the library's social media platforms related to their subject specialties, allowing the demonstration of personal interests and expertise on their social media page to fulfill their users' self-expression and identity information needs. Librarians also showcase their knowledge by participating in online research platforms such as LinkedIn, Academia, Research Gate, and Refseek, among others, to answer users' queries. Librarians and users leverage social media to interact through multimedia formats like virtual "likes," citations, and comments, providing social validation and boosting self-esteem. Therefore, personal integrative needs assist librarians in fostering

users' connections through social media platforms and strengthening their relationships beyond the library wall.

Social integrative need implies using social media to connect and interact with community users to satisfy their research communication needs. The librarians use their social media platform to network with their users, fulfil their social needs, group them into a research community, and engage them with unfolding events. The social integrative needs have been tagged as "librarians of friendship." Librarians' friendship is the collaboration among library professionals, such as inter-library loans where the librarians of one library collaborate with other library professionals through social media platforms to satisfy the community research users. The essence is to answer complex users' queries by engaging other professional experts through online mediums such as WhatsApp and Telegram<sup>73</sup>.

Tension release needs is the desire to alleviate feelings of stress, anxiety, and tension through social media use. This need is rooted in the tendency to seek relaxation and stress relief. Social media use provides various features and tools that enable librarians and their clientele to escape academic tension and pressure by browsing to have fun, playing games and leisure, and watching movies or content shared on TikTok, Facebook, or Instagram. Librarians and users use social media to unwind by casually following others on platforms like YouTube and other social media platforms and distancing themselves from work tensions during personal hours. Uses and Gratifications theory posits that individuals release tension by engaging in social media activities<sup>74</sup>.

The U&GT classified tension release needs into media content, exposure to the media, and social content as a medium used to enjoy the evasion of tension by the library community users

and personnel. Though this channel has been argued, it has existed even before social media use. For example, community users use media content to relax their nerves by watching television with their families, listening to the radio or news, and reading books. They also use exposure to the media by engaging themselves in different sports games, such as football, chess, draft, Ludo, cards, and snooker, or going on vacations<sup>75</sup>. All these categories of media content, exposure to media, and social content represent how librarians drive gratification from social media, which continues the traditional gratifications sought from old media. The gratification theory sees social media content as a new wave of social media use where community users and librarians gratify themselves and release their tensions by pressing their phones to watch different funny content to relax their nerves<sup>76</sup>.

In addition, gratification theory further explains the new waves of social media use in disseminating information through modality-based gratification, agency-based gratification, interactivity-based gratification, and navigability-based gratification, which explains how librarians drive satisfaction by using social media for digital reference service delivery. Modality-based gratifications are one of the new waves of social media content in which librarians interact with their clientele through voice notes, visuals, audiovisuals, and text messages to disseminate and answer users' queries. Agency-based gratification is another medium of social media use where librarians create and share information and content among community users. This medium has been used as agency enhancement for community building coupled with librarians' ability to answer users' needs accurately and tailor the content to one's specific desires. Interactivity-based gratifications explain the unprecedented role of librarians in using social media content to satisfy the needs of their information seekers. The medium serves as an accurate responsiveness in dealing with, interacting with, and responding to the

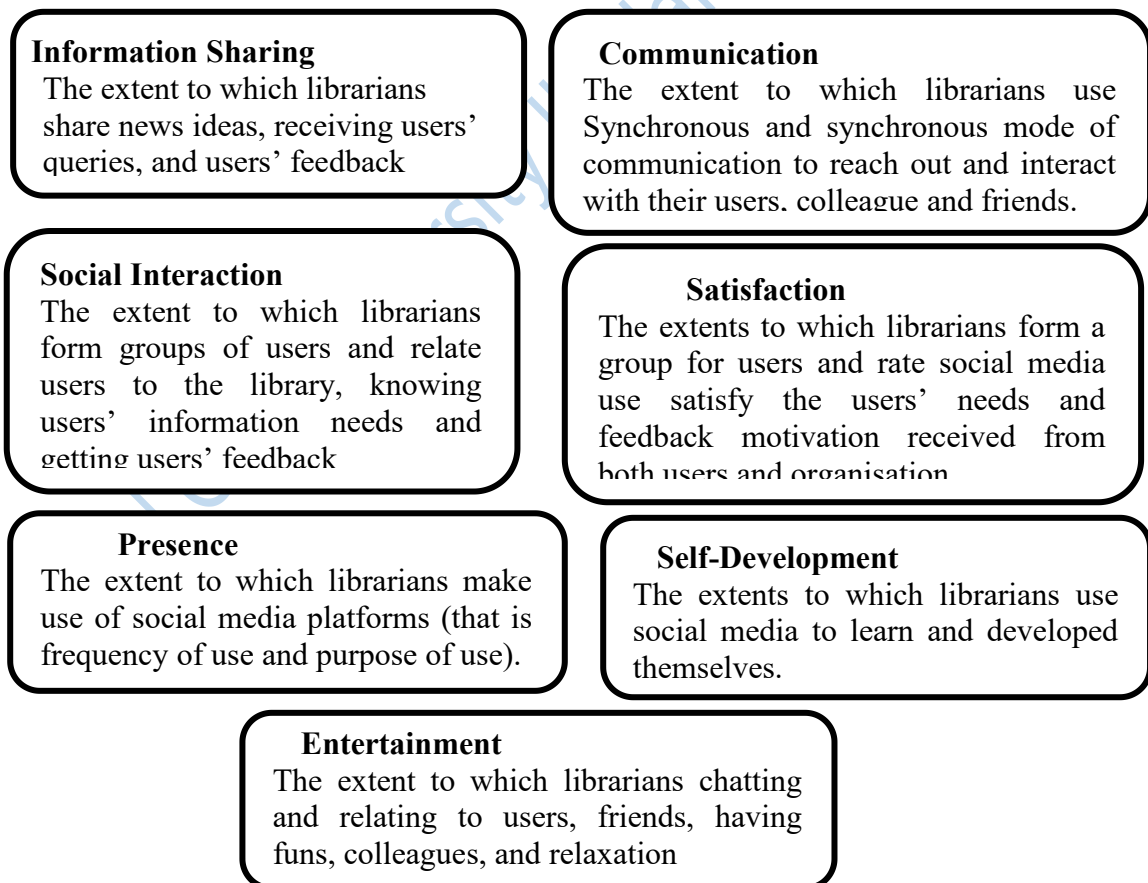
community users' needs. Finally, navigability-based gratification is navigating through different social media and search engines to receive complex queries from community users to be answered by librarians<sup>77</sup>.

Similarly, the theory also gives its verdict on the signification of media communication in digital reference service delivery to librarians, particularly in various tertiary institutions. The theory explores the adaptation of media communication, encompassing old and new media platforms to digital reference service delivery as a comprehensive source of information dissemination beyond the library walls. The instances were given on the role of newspapers, radio, and television and emerging technologies such as 3-D television, Audio and Video Cassette Recorder, E-mail, the World Wide Web, Facebook, TikTok, and Artificial intelligence (AI)<sup>78</sup>. The theory has been instrumental in understanding users' decisions regarding using these communication tools.

The theory's principle shows that librarians derive satisfaction through social media use, particularly regarding interaction, communication, and relationship-building with their library community users. They receive professional and personal gratification in displaying their competence and ability to think critically and tailor their services to satisfy users' needs, including sharing library activities and interpersonal communication<sup>80</sup>. Also, the advent of technology and new waves of social media platforms have fortified the influence of U&GT in digital reference service delivery and instilled a high level of communication skills with librarians to disseminate their worldwide information beyond the library's four walls. It is a medium used by librarians to demonstrate and show their professional skills in information

dissemination with the ability to cope with and satisfy the present and potential community users.

The use of social media by librarians to satisfy the urgency of their library users has brought the principle of reciprocity, where the community library users appreciate the librarians with good feedback, monetary compensation, and sometimes words of encouragement. The motivation and satisfaction derived by the librarians, coupled with the security rights and privacy enjoyed by the information seekers, make the SMU a convenient platform for promoting, disseminating, and delivering digital reference services better than traditional means. Below is how the librarians of tertiary institutions use the U&GT model to disseminate information among the library community users.



**Figure 2.2.4 Self –Structure Uses and Gratification Theory<sup>74</sup>.**

This model was adapted for this study to explain the motivation and gratification derived by librarians in the SMU for library and information service delivery. The theory was also adapted to understand the motivation and gratification derived by library users when using social media platforms provided by librarians. The strengths of this theory are founded on its individuality, which offers excellent analysis. The theory helps analyse and understand what motivates librarians in tertiary institutions to adopt and use social media platforms for digital reference service delivery and the gratification they derive from using these tools. Similarly, the theory firmly explains what motivates library users to use social media platforms to ask queries and seek assistance from librarians and the gratification they derive from connecting to these services. The gratification could be personal, professional, or a combination of both<sup>79</sup>.

Despite the criticism that U&GT has recorded over time, the potency of this theory lies in the ability to provide researchers with the knowledge to arbitrate communication situations via a single or multiple set of information needs, psychological motives, communication channels, communication content, and psychological gratifications within a particular or cross-cultural context. This implies that the fundamental questions that U&GT is answering in this research are “What motivates SMU, and what gratification is derived from its usage by librarians?” “What gratification is derived from using these services”.

### **2.2.3 RED Critical Thinking Model**

The RED Critical Thinking model developed by Watson and Glaser in 1980 explains the level of critical thinking skills of librarians when using social media to promote digital reference service delivery in the digital age<sup>80</sup>. The information explosion in the digital age required

librarians to think beyond their armchairs to satisfy their community users. Acquiring critical thinking skills from librarians would allow them to analyse, evaluate, and make informed decisions using evidence-based and sound reasoning. Critical thinking theory originated from Socrates, an ancient Greek philosopher, who encouraged individuals to question assumptions and engage in thoughtful dialogue to pursue knowledge. The theory gained momentum in the 20th century when Watson and Glaser developed a psychological model called the “RED” critical model to measure an individual's critical thinking ability<sup>81</sup>.

The RED critical thinking model requires librarians to acquire significant skills to interpret a comprehensive framework that could be applied for assessment purposes and practical application in various contexts and situations. The theory has been designed to provide a systematic approach to critical thinking skills with a step-by-step process to enhance their analytical and evaluative skills in providing and disseminating digital reference services to community users<sup>81</sup>. This model draws inspiration from various theoretical foundations, incorporating ideas from influential thinkers in philosophy, psychology, and education. One such influential figure is John Dewey, an American philosopher and educational reformer who emphasizes the importance of inquiry, reflection, and active learning. He posits that critical thinking should be an integral part of the educational process, particularly in the field of library, to enable students to engage with relevant information, question assumptions, and develop their reasoning skills<sup>82</sup>. Added to this is the integration of logic and argumentation to the RED critical thinking model in answering complex queries and analyzing and interpreting data to satisfy the needs of information seekers. Below is the model of RED critical thinking model.

**R**ecognition of Assumption

**E**valuation of Assumption

### **Figure 2.2.5 RED Critical Thinking Model<sup>83</sup>**

The RED Model comprises three (3) key elements: Recognition of Assumptions, Evaluation of Arguments, and Drawing Conclusions or Decision Making. Each component is vital in critical thinking, guiding individuals to analyse information and make informed judgments. The Recognition of Assumptions is a crucial element of the RED (Recognize, Evaluate, Draw Conclusion/Decision-Making) critical thinking model. This element focuses on identifying the implicit assumptions underlying arguments or statements. Assumptions are the unspoken or taken-for-granted beliefs and premises that form the foundation of an argument. By recognizing and examining these assumptions, individuals can better understand the argument's underlying structure and more effectively evaluate its validity.

The Evaluate Assumption component of the RED Model involves the critical assessment of the quality and validity of arguments. This requires individuals to analyse an argument's evidence, reasoning, and logical structure and identify any fallacies, biases, or inconsistencies. By engaging in this evaluative process, individuals can avoid being unduly influenced by flawed or unsupported arguments and make more informed judgments. Lastly, the draw-conclusion

element of the RED model provides a framework for applying critical thinking skills to the decision-making process. This element guides individuals in considering various perspectives, weighing the pros and cons, and predicting potential outcomes before concluding. By applying the principles of critical thinking skills to decision-making, individuals can mitigate the risks associated with impulsive or biased judgments, ensuring that their decisions are well-informed and grounded in sound reasoning. Together, these elements of the RED Model empower individuals to think critically, challenge assumptions, evaluate arguments, and make informed decisions, all of which are crucial for navigating the complex and ever-changing landscape of information and decision-making in today's world<sup>84</sup>.

Incorporating the RED Critical Thinking Model into Social Media Use and Digital Reference Service Delivery allows librarians to think beyond the physical library wall to provide accurate and reliable information to their clientele. It also enhances the quality of their services and problem-solving in online research as well as provides a systematic approach to critical analysis and reasoning for the librarians to disseminate and deliver digital reference services to their community users through social media platforms<sup>85</sup>. This model is very significant in library science, especially regarding acquiring, evaluating, and disseminating knowledge to library users in the digital age. Thus, the critical thinking model recognizes assumptions, evaluates arguments, and draws sound conclusions to satisfy the needs of information seekers.

Librarians must apply and demonstrate the critical thinking skills model in many forms, particularly in the era of information explosion with unlimited use of social media platforms and search engines. The librarians must scrutinize, evaluate, interpret, and analyse the information before answering users' queries. Thus, the critical thinking model is an active form

of deliberate, persistent, and careful reflection in delivering information to community users as it challenges the preconceptions and perceptions of librarians and users. Critical thinking skills serve as a guide in scrutinizing, analysing, and answering users' queries without being biased. Some scholars have tagged this as 'meta-cognition or the act of thinking about how we think<sup>86</sup>.'

Furthermore, technology has saturated the system with different search engines and social media platforms, making the source of information challenging to validate either by librarians or information users. Library users face rigorous challenges in recognising assumptions, evaluating relevant information, and making informed or rightful decisions. Adopting the critical thinking skills principle model in digital reference service delivery continues to shape and navigate the vast landscape of social media and other search engines in delivering accurate and reliable information to library community users despite the information explosion. By incorporating the RED Model into social media use and digital reference service delivery, librarians could critically evaluate, analyse, and make informed decisions in social media-saturated environments.

Critical thinking is actively and skilfully conceptualizing, analysing, synthesizing, and critically evaluating information from various social media and search engine sources before disseminating and delivering it to library community users. The ability to effectively scrutinize the information obtained from these multiple sources before it is disseminated is an excellent challenge for librarians in the age of the information explosion. The RED (Recognition, Evaluation, and Drawing conclusion) critical thinking model has become a helpful framework

and lessens the burden of scrutinizing challenges confronting librarians when they develop and utilize critical thinking skills in their digital reference service delivery.

The recognition of assumption is the first step in the critical thinking process. It involves identifying and acknowledging the information present in a given situation. In social media use, librarians must embrace the critical thinking skill principles to evaluate the source of information obtained from social media thoroughly, the tools available, and the types of information shared on each platform to avoid misinformation or fake news. They must also recognize social media's potential biases and limitations in the information obtained through different search engines. Inculcating the principle of critical thinking allows librarians to answer complex queries and identify users' problems through their requests. For example, suppose the user requests information on how to commit suicide. In that case, the librarians should be critical and skilled enough to answer such requests without insulting or abusing the information seeker.

Librarians must possess the ability to identify assumptions in users' comments or queries on Facebook/Twitter or WhatsApp, such as "All online sources are credible," recognize biases in statements like "My topic is too narrow or broad to find sources," or "I don't have enough time for thorough research." Understanding and observing users' research behaviours and noting preconceptions displayed are paramount. For example, some users rely only on Google results or Wikipedia without questioning or navigating other sources of information<sup>87</sup>.

The next step in the critical thinking process is Evaluation. This involves assessing and analysing the information gathered to determine its credibility, relevance, and accuracy. In the

context of social media, librarians must be able to evaluate the information they encounter critically before it is delivered or disseminated to their clientele. This includes considering the source of the information, the evidence or supporting data provided, and any potential biases or motives behind the information. Librarians must also be able to recognize any gaps or inconsistencies in the information and evaluate its reliability and validity. Critically evaluate the source of information objectively through questioning or cross-examination on social media to ensure that community users provide accurate, reliable, and authentic information without bias<sup>88</sup>.

Furthermore, librarians can discuss with users to uncover flawed logic and gaps and ask probing follow-up questions on social media platforms like Facebook/WhatsApp/ Google chat to evaluate users' evaluation process, for example, "What makes you say that? "What steps did you take to determine the reliability and credibility of those sources you have found?" all these have been used by skillful librarians to process the users' queries across the various fields. The final step in the critical thinking process is concluding. This involves using the information gathered and evaluated to form a judgment or conclusion. Librarians must use critical thinking skills in assessing and analysing all the information obtained from various social media sources and other search engines and drawing evidence-based conclusions from and to their users' requests. An evidence-based conclusion could have been drawn after the librarians synthesized the information gathered and evaluated it to form a well-informed and logical conclusion<sup>89</sup>.

However, these platforms are also rife with assumptions, biases, and misinformation. By utilizing the Recognition of Assumptions element of the RED Model, librarians can become more aware of implicit assumptions within social media content. When engaging with posts or

articles on social media, it is essential to question the underlying assumptions. Consider the source, the author's intentions, and potential biases that may influence the information presented. By recognizing assumptions, librarians can approach social media content critically, avoiding the pitfalls of accepting information at face value.

Further, Social media platforms are flooded with various arguments, opinions, and perspectives. However, not all arguments are superior or baseless. The Evaluation of Arguments element of the RED Model provides a framework for critically assessing the quality and validity of arguments encountered on social media platforms. When encountering an argument on social media, it becomes crucial to evaluate and analyse the arguments presented, the logical reasoning employed, and the overall structure of the argument by skillful librarians. Consider using fallacies, biases, or emotional appeals that may weaken the argument's credibility. By applying the Evaluation of Arguments element, librarians would develop a discerning eye and avoid being swayed by faulty reasoning or misleading information.

Social media platforms, such as Facebook, WhatsApp, TikTok, Telegram, and Instagram, play a significant role in information sharing and retrieval. However, the vast amount of information on these platforms may be overwhelming, making decision-making a critical component of digital reference service delivery. By employing the decision-making element of the RED Model, library community users, and personnel draw a crucial conclusion after evaluating and analysing the information obtained and the channel of information and drawing their inference in providing digital reference services. Librarians assist community users in navigating library databases or online information resources and weigh the credibility of sources before decision-

making. By utilizing critical thinking skills, librarians guide users toward reliable and relevant information, ensuring the delivery of high-quality digital reference services<sup>104</sup>.

The RED Model becomes indispensable in delivering digital reference services through social media use. Due to social media content's brevity and fragmented nature, it becomes necessary for librarians to acquire critical thinking skills to fill in gaps and draw logical conclusions in the face of information explosion. Drawing logical inferences allows librarians to make reasonable judgments and avoid jumping to unfounded conclusions when encountering incomplete information or ambiguous statements on social media platforms. This makes the librarians navigate social media platform more thoughtful and discerning, reducing the risk of misinterpretation or spreading misinformation that can lead their clientele astray.

Nevertheless, the advent of technology has broken the barriers of library walls and turned libraries into users' pockets using social media and other search engines. Most library community users rely more on online resources to obtain relevant information. Incorporating RED model critical thinking skills enhances the quality and effectiveness of digital reference services delivery to assist their clientele in navigating through different sources<sup>90</sup>. The benefit of this model cannot be overemphasized as it revolutionised librarians research approach and effectively questioned users' assumptions and sought evidence. It allows librarians to think beyond their arm-pits and suggest additional perspectives and sources for corroboration<sup>91</sup>. Cultivating critical thinking skills by librarians has effectively delivered digital reference services with new evidence. This affirms the need for librarians to apply critical thinking skills in digital reference services delivery and other library service delivery to develop such skills among users.

Therefore, the study explores the application of the critical thinking model across library services in tertiary institutions feel critical thinking skill model has played an unprecedented role in delivering digital reference services to the librarians clientele, helping users develop lifelong independent learning abilities through guided evaluation of assumptions<sup>92</sup>. Critical thinking skills assist librarians in delivering quality digital reference services to their clientele and develop users' research skills. The model suggests additional avenues for research and corroboration of evidence when responding to queries on research guides. It recommends synthesizing data from multiple quality sources to draw evidence-based conclusions in virtual consultations. Point out any unsubstantiated conclusions to users interactively on Telegram/Facebook or WhatsApp. And engage them in re-evaluating with new perspectives and encourage users to re-examine initial positions stated on subject-specific social media platforms like Facebook groups based on counter-arguments and facts discussed.

The model suggests testing assumptions and conclusions by searching specific databases or consulting alternative perspectives to broaden understanding. Recommend synthesizing relevant facts from multiple reliable sources before finalizing arguments when wrapping up online consultations. Encourage users who share drafts on research forums to re-examine positions by actively exploring counterarguments and considering evidence from additional viewpoints. The key is guiding users through each step interactively using questioning, discussion, and collaborative problem-solving to develop their critical evaluation abilities over time. By drawing conclusions based on critical thinking, librarians can provide their users with accurate and reliable information, even in the face of potential misinformation or biased information on social media.

The RED model aligns well with how librarians leverage critical thinking on social media for reference service delivery. By strategically applying the steps, they can effectively address complex queries, model exemplary evaluation, and empower independent lifelong learning among users. The framework also supports quality assessment of online interactions. The model's emphasis on questioning, evidence, and logic strengthens librarians' advisory role on social platforms. Librarians with high critical thinking skills must engage empathetically with users while guiding them in critically evaluating assumptions and perspectives. It emphasizes the importance of questioning underlying assumptions to determine actual information needs, which aligns with the critical thinking model<sup>93</sup>. It optimizes social media policies and guidelines to enhance digital reference services delivery when integrated into critical thinking skills in training programs. Therefore, the RED model provides a robust theoretical lens for librarians to deliver consultative, transformative guidance online.

The Recognition of Assumptions of the RED Model is highly relevant in digital reference service delivery by librarians in tertiary institutions. This model helps librarians effectively and efficiently deliver quality information needed to their users. The Recognizing Assumptions, within the context of digital reference service delivery, users may come with preconceived notions or assumptions about their research topic or the available resources. By recognizing these assumptions, librarians must better understand the user's perspective and tailor their assistance accordingly. For example, suppose a user assumes that online sources are always reliable. In that case, the librarians can help them critically evaluate the credibility, reliability, and authenticity of the sources relevant to their research. It can also uncover the implicit assumptions underlying their inquiry through dialogue and asking probing questions. Librarians should be mindful of the assumptions inherent in the search query or research topic

when assisting users<sup>94</sup>. This approach fosters critical thinking by challenging users to question their assumptions and consider alternative perspectives.

In the digital era, evaluating arguments of the RED Model becomes even more pertinent in digital reference service delivery. Librarians must assist users in assessing the credibility and reliability of online information sources and resources and the arguments presented within those sources. Librarians should apply critical thinking skills to evaluate the assumptions made by users. This involves questioning the assumptions' validity, reliability, and accuracy and examining them from different perspectives. By doing so, librarians can guide users to think critically about their research and identify any potential biases or gaps in their understanding. When directing users toward evaluating online information resources or sources, librarians must emphasize the importance of critically assessing the sources' authority, accuracy, reliability, and objectivity<sup>95</sup>. This involves teaching users to evaluate the reputation of the authors, examine the supporting evidence, and consider potential biases or conflicts of interest. By promoting critical evaluation, librarians empower users to make informed decisions about the sources they incorporate into their research.

Draw conclusion or decision making is the final step in the critical thinking model which librarians can use to assist users in synthesizing the information they have gathered and reaching logical and evidence-based conclusions. It is essential in digital reference service delivery, mainly when assisting users in selecting appropriate resources and research strategies. It assists librarians in helping users navigate the overwhelming amount of information available online and guides them toward the most relevant and reliable sources. In the digital realm, librarians employ decision-making strategies such as identifying key search terms,

utilizing advanced search techniques, and evaluating the relevance and quality of search results<sup>96</sup>.

In addition, the RED critical thinking model is also essential in digital reference service delivery as it encourages librarians to ask relevant and thought-provoking questions, actively listen to users, and provide well-reasoned responses. It also helps librarians avoid making assumptions and encourages them to gather evidence and information before concluding. When encountering gaps in information or ambiguous statements, librarians help users develop critical thinking skills by enabling them to consider alternative interpretations, search for additional evidence, and assess the credibility of the sources providing the information, which will enhance their ability to interpret and analyse the data they encounter in their research.

Therefore, critical thinking skills are crucial for librarians in social media use and digital reference service delivery as they promote informed and critical engagement with information, which is especially important in the digital age where information is available and easily accessible but may not always be reliable. As noted by scholars, "critical thinking is about questioning and assessing the information we encounter and making decisions based on evidence, rather than assumptions or prejudice. This model promotes evidence-based dialogue between librarians and users. It encourages librarians to think reflectively about how users from diverse backgrounds may approach a topic differently based on their unique perspectives and experiences. This helps deliver more nuanced, empathetic guidance<sup>6</sup>.

Applying critical evaluation at each step helps librarians avoid hasty judgments and instead focus conversations on logically analysing available information through a framework. The steps provide a structured approach for librarians to answer surface questions and engage users

in higher-order thinking that unpacks complex issues. This cultivates advanced academic skills when the user inquires, “How to commit suicide or how to become a murder.” Reference librarians, experts, or personnel must apply critical thinking skills to answer such queries. In such a situation, librarians must question assumptions to uncover the rationale behind queries and direct users toward relevant and rightful information. It facilitates collaboration on problem-solving where librarians work with users to jointly recognise flaws, test assumptions, and develop well-supported conclusions. This strengthens the learning experience.

The model future-proofs digital reference services delivery by equipping users with critical lenses to navigate evolving information environments long after interacting independently. Incorporating this model systematically trains librarians to deliver consultative, transformative guidance aligned with institutional pedagogical goals of developing independent, lifelong learners. The structure also aids in the assessment of interactions and service quality.

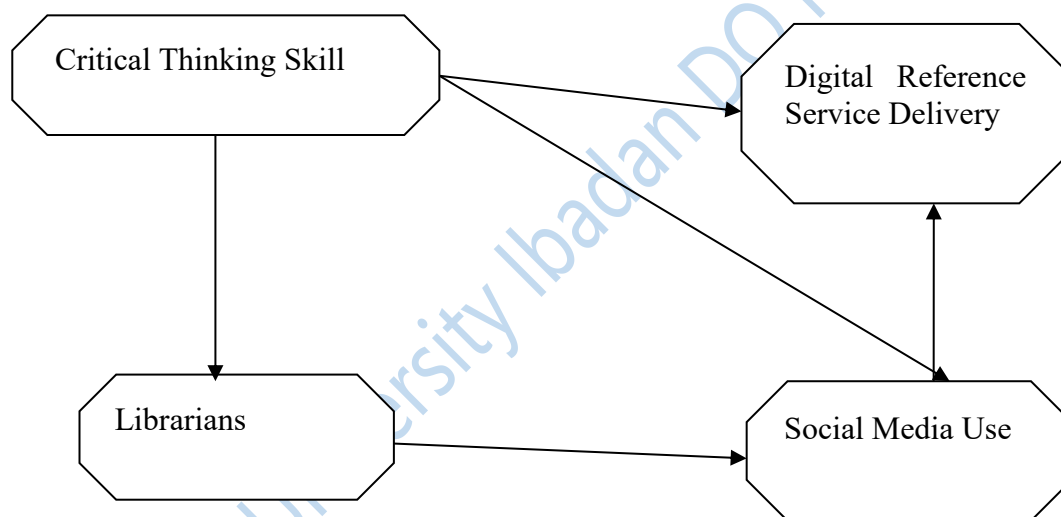
Favourably, critical thinking involves identifying the source of information, analysing its credibility, reflecting on whether it is consistent with prior knowledge, and drawing conclusions<sup>97</sup>. Recognising assumptions allows librarians to identify underlying beliefs or attitudes in the information accessed, enabling them to critically evaluate its validity and relevance<sup>108</sup>. This evaluation of information involves carefully examining sources, questioning biases, and considering multiple perspectives to ensure the reliability and credibility of the information provided. Concluding requires synthesising and analysing the information gathered to form logical and well-supported judgments or recommendations for the benefit of library users. Librarians with critical thinking skills must provide adequate and timely digital reference service delivery by guiding users in evaluating and using information effectively<sup>98</sup>.

Critical thinking skills are essential in selecting and acquiring library information resources, especially reference information resources that will meet the diverse needs of library users in this digital era. Critical thinking skills allow librarians to navigate social media platforms and help users by providing answers to their queries, locating and evaluating information sources that will meet their needs, and ensuring that users receive accurate and reliable resources in their comfort zone<sup>99</sup>. Supporting research by helping researchers navigate complex databases, critically evaluate research articles, identify gaps in existing literature, and deliver relevant digital reference services in a digital environment.

Critical thinking is essential for librarians in online information retrieval, answering users' queries, delivering digital reference services, and providing user support. Libraries are no longer just repositories of physical books; they have transformed into digital information hubs. Librarians must critically evaluate and analyse information sources in this rapidly evolving information landscape, assess their reliability and credibility, and effectively communicate this information to users. Critical thinking skills enable librarians to navigate complex information environments and provide users with accurate and relevant resources<sup>100</sup>. The literature reviewed highlights the significance of critical thinking skills in Digital Reference Service Delivery (DRSD) among librarians working in tertiary institutions. Developing these skills through education, training, experience, collaboration, and supportive organisational culture is essential for providing users with effective DRSD and library services.

The literature reviewed indicates that critical thinking skills are vital for librarians in tertiary institutions. Librarians with essential thinking skills are better equipped to navigate the complexities of the digital information landscape, support users' information needs, and

develop innovations on SMU. Methods of satisfying users' information needs with digital reference service delivery contribute to the overall quality of library services. Organising professional development programmes and training is necessary to enhance critical thinking skills among librarians and foster SMU in DRSD to satisfy their user's needs. SMU allows librarians to reflect on their critical thinking skills through self-assessment tools and engage in targeted development activities, peer evaluation such as observation, evaluation, and user feedback (through survey, focus/group discussion), which can provide insight into the effectiveness of social media use in digital reference service delivery<sup>101</sup>.



**Figure 2.2.6 Self-Structural Model<sup>102</sup>**

## 2.3 Review of Empirical Studies

### 2.3.1 Digital Reference Service Delivery (DRSD) and Social Media Use (SMU)

Digital reference services delivery is an online mode of communication to a broader community of users irrespective of their locations. This service is the most crucial part of the library services. It is called a “virtual reference service” due to its sufficiency in answering users' queries and solving their problems in a digital environment. The easy accessibility and usability of these services to library users, particularly those requesting assistance from the librarians. Therefore, digital reference service delivery rebrands traditional reference service and library activities to easily access relevant information resources for a wider community at their convenient corners<sup>103</sup>. The ubiquitousness of digital reference service delivery has rebranded the usefulness of the library and tagged it “library without borders,” as it comprises all the activities performed technically and virtually beyond the library wall. That is, it is a method of determining how the query is being retrieved from the users and how the response is being provided to the needs of users irrespective of the users' location.

Digital Reference Service Delivery (DRSD) has been anchored on elements of service quality such as reliability, responsiveness, guarantee knowledge and courtesy, empathy, and tangible. Therefore, the success of every tertiary institution's library in this digital era largely depends on the quality of information and reference service delivery offered to meet users' changing and dynamic information needs. Such reference service delivery encompasses activities, services, and interfaces performed by librarians who constitute information creation, storage, retrieval, and appropriate dissemination. Digital reference service delivery aims to meet users' information demands and needs at the right time, in a suitable format, and within the shortest possible time. It further indicates that digital reference service delivery is concerned with providing a solution to users' needs and is the central crux of a library's existence.

Moreover, digital reference service delivery has been explained from the perspective of information and communication technology (ICT) with new techniques that revolutionised the mode of providing, accessing, and delivering reference services to users. The traditional means of reference services delivery have given creative innovations to electronic means of communication with the adoption of technological tools and internet things. The advancement of ICT has made it easier to satisfy users with information needs irrespective of their location or time. Therefore, the library's reference section no longer operates only face-to-face but includes digital operations in its service delivery<sup>104</sup>.

The effective growth of DRSD is based on the premise that the needs of library patrons ought to be met. It is a reference service delivery rendered to library users under the Internet facility's platform. DRSD can be regarded as “the provision of reference services involving collaboration between the library patrons and librarians or reference librarians expert, in a computer-based medium. It is a service that uses various media like e-mail, web forms, chatbot, video conferencing, and Voice over Internet Protocol (VoIP) to connect and help users in a digital environment. DRSD is a channel that offers reference services through a digital environment where library users can ask queries, and answers are provided to their needs at any time without visiting the physical building of the library<sup>105</sup>. It is the services that librarians or reference librarian experts can render to provide personal assistance to library users in an online environment without limited time (24/7 accessibility). This service supports social inclusion by extending reference service delivery to the challenged users who cannot visit the library.

Digital reference service delivery is a process by which people can submit their queries and have them be attended to by librarians or reference librarian experts through some electronic gadget such as personal computer system, Smart Phones, and other means of communication (email, chat, Web forms, etc.) not in person or over the phone. It is “a network of expertise, human intermediation and resources placed at the users' disposal in an online environment, which employs technological tools wherever possible, allowing human experts to concentrate on ‘answered queries. Digital reference services are seen as a “remote communication” between librarians and library users to make inquiries and find solutions to the users' inquiries. They utilise computer technology systems to share the same objective, disseminate information, and use the Internet to facilitate the delivery of human intermediation at a distance.

The study explains the reliance on computer technology systems and the internet, which introduce potential technical issues and accessibility barriers for librarians and users. Poor internet connectivity, software glitches, or hardware limitations can hinder the smooth operation of digital reference services delivery. Furthermore, individuals with limited technological literacy or disabilities may face challenges accessing and utilising these services effectively<sup>32</sup>. While digital reference services aim to provide timely responses, the absence of real-time assistance can sometimes be a limitation. Users may experience delays in receiving responses to their inquiries, especially during peak periods or when librarians are not available. This delay can impact the user experience and hinder the effectiveness of digital reference service delivery. A recent study revealed user dissatisfaction with response times in digital reference services, emphasising the importance of prompt and efficient communication.

Hence, in this study context, Digital Reference Service Delivery (DRSD) is a reference service provided through digital platforms and technological tools rather than in person. It uses electronic communication tools and virtual spaces to connect users with librarians, resources, and services to fulfil reference services and information needs remotely<sup>106</sup>. DRSD delivers reference transactions through synchronous (chatbot, Instant Message) or asynchronous (email, text message) modes, leveraging technologies like websites, portals, social media, and collaborative workspaces for service provision.

Digital reference service delivery has been conceived from its three major elements: (1) information services that involve either finding the required information on behalf of the users or assisting users in finding information. (2) instruction in using the library web page, consisting of helping users learn the skills required to use library resources and services. (3) user guidance, in which users are assisted in selecting the most appropriate information sources to meet their information needs. In other words, digital reference service delivery has been explained in synchronous and asynchronous ways. Synchronous is the use of chatbot, Instant Message) and asynchronous is the use of email and text message modes, leveraging technologies like websites, portals, social media, and collaborative workspaces for service provision<sup>107</sup>. That is, it is a channel that allows users to access reference assistance from any location at their convenience through digital devices. The scholar further explains synchronous and asynchronous in the following ways.

The synchronous mode of digital reference service delivery is a method through which users and librarians engage in real-time communication and information exchange through digital platforms. In this mode, users interact with librarians via live chat, video conferencing, or

instant messaging, and librarians respond to inquiries or requests immediately<sup>108</sup>. Unlike asynchronous modes, where communication occurs with a delay, synchronous digital reference service delivery allows for immediate interaction, enabling users to receive real-time assistance or information. This mode is particularly beneficial for users with urgent queries or those who prefer immediate feedback and interaction with librarians. The synchronous digital reference service delivery modes offer immediate assistance and real-time interaction, catering to users' needs for timely information access and support. It provides phone support, real-time chat, chat GPT, and librarians robots, which are further explained as follows: phone support, real-time chat, ChatGPT, librarians robot, and social media platforms.

Phone support for digital reference services involves users contacting librarians to seek assistance with their information needs. Librarians provide real-time responses and guidance over the phone, addressing user queries and offering relevant resources or referrals. This mode allows for immediate interaction and verbal communication, enabling librarians to clarify inquiries and provide personalised assistance. A real-time digital reference service enables users to engage in real-time text-based conversations with librarians through dedicated chat platforms or embedded chat widgets on library websites. Library patrons can submit inquiries and receive immediate responses, facilitating quick access to information and assistance. Librarians utilise chat transcripts to document interactions and follow up on librarians' inquiries as needed.

Chat GPT refers to using AI-powered chatbots, such as OpenAI's GPT-based models, to provide digital reference services. These chatbots simulate human-like conversations and can autonomously respond to library users' inquiries based on pre-trained knowledge and

algorithms. Chat GPT services offer instant access to information and assistance, operating 24/7 without human intervention. Librarians may oversee chatbot interactions and intervene when necessary to ensure accuracy and user satisfaction.

Social media platforms serve as channels for synchronous digital reference service delivery, allowing library patrons to connect with librarians and access assistance in real-time. Librarians maintain active social media accounts where users can submit inquiries via comments, direct messages, or live chat features. Librarians monitor social media channels to respond promptly to user queries, share relevant resources, and engage with the community. Social media enhances accessibility and outreach, reaching users where they already spend time online<sup>109</sup>. This mode of digital reference service delivery is the pattern and method used mainly by librarians in tertiary institutions in Ekiti state, Nigeria, to deliver digital reference services to library users because of its immediate response rather than an asynchronous mode of digital reference.

An asynchronous mode of digital reference service delivery can be seen as a mode of communication that occurs with a time delay and does not require immediate response. This mode of communication allows library patrons to seek assistance at their convenience without needing to be present or available in real-time. The asynchronous digital reference service delivery mode will enable users and librarians to communicate and exchange information without simultaneous interaction. In this mode, users submit their inquiries or requests through digital platforms such as email, online forums, or messaging systems, and librarians respond to these inquiries at their convenience<sup>110</sup>. Unlike synchronous modes, such as real-time chat or video conferencing, where communication occurs in real-time, asynchronous digital reference

service delivery allows for flexibility in inquiry submission and response time, accommodating users and librarians with varying schedules and time zones.

This mode enables users to receive assistance or information even when librarians are unavailable online then; such librarians would find a way to attend to multiple inquiries from information seekers. Asynchronous digital reference service delivery uses the following tools in delivering digital reference services (Email, online forum, text message, video conferencing, and web-based). An email-based digital reference service involves library patrons sending inquiries via email, and librarians respond to these inquiries asynchronously. Users typically provide detailed information about their information needs in their emails, allowing librarians or reference librarian experts to craft comprehensive and personalised responses. This mode offers both library patrons and personnel flexibility as they can respond to library users' queries at their convenience. Email services often include features such as auto-replies to acknowledge receipt of inquiries and maintain communication transparency, ensuring users feel their inquiries are being taken seriously and responded to with care.

Online forums dedicated to digital reference service delivery provide a platform for patrons to post queries, which librarians or reference librarian experts then address. These forums facilitate asynchronous communication, allowing library patrons to access responses. Library patrons can also benefit from the collective knowledge of the forum community, as multiple perspectives may be offered in response to a single query. A text message-based digital reference service delivery enables users to send brief inquiries via SMS, with librarians or reference librarians' experts responding asynchronously. This mode caters to users who prefer quick and concise interactions. Librarians use this medium to provide straightforward answers

or guidance within the limitations of text messaging. Additionally, text message services may utilise automated responses or chatbots to handle common queries and provide immediate assistance<sup>83</sup>.

Video conferencing for digital reference service delivery allows users to schedule appointments for one-on-one consultations with librarians. During these sessions, library patrons would engage in real-time discussions and receive personalised assistance tailored to their information needs. While video conferences are synchronous by nature, they can also be recorded for later reference, enabling asynchronous access for librarians unable to attend live sessions. Librarians also utilise screen sharing and collaborative tools to enhance the consultation experience. Web-based digital reference service delivery encompasses various online platforms, such as chat widgets embedded on library websites or dedicated digital reference portals. Library patrons can initiate chat sessions with librarians, submitting inquiries and receiving responses in real-time or asynchronously, depending on librarians' availability. Web-based services often feature knowledge bases, FAQs, and tutorials to supplement live assistance, allowing library patrons to access information independently.

The emerging trend in DRSD of librarians in today's digital age is that the role of libraries and librarians has evolved significantly. As technology advances rapidly, libraries adapt to digital transformation and embrace new trends to provide efficient and effective reference services. Digital reference service delivery has become vital to modern library operations, allowing users to access information and assistance remotely. Digital reference services are crucial in meeting users' information needs in a fast-paced and technology-driven world. With the increasing reliance on digital resources, users expect instant access to information and

assistance, irrespective of their physical location. The traditional model of in-person reference assistance is no longer sufficient to cater to these evolving needs.

Digital reference services bridge the gap by providing users with remote access to expert guidance and resources, ensuring that the library remains a valuable and accessible resource in the digital age. So, digital reference services have undergone a significant transformation over the years. Initially, email-based reference services were introduced, allowing users to send their queries to librarians, who would respond via email. While this was a step forward in remote assistance, it lacked the immediacy and interactivity users desired. As technology progressed, new digital reference service delivery avenues emerged, such as live chat services, video conferencing, and collaborative virtual environments<sup>23</sup>.

Digital reference services have had a profound impact on the way users interact with libraries and access information. They have expanded the reach of libraries beyond physical boundaries, enabling users to seek assistance and access resources from anywhere in the world. The convenience and efficiency of digital reference services have also contributed to increased user satisfaction and engagement. However, with the rapid advancement of technology, librarians adapt to emerging trends and utilise new tools to enhance digital reference service delivery further. To stay relevant and meet the changing needs of users, librarians must embrace new trends in digital reference service delivery. Integrating innovative technologies and approaches enhanced digital reference services' efficiency, effectiveness, and user experience. This unprecedented technology has revolutionised the delivery of reference service from the traditional way into virtual and augmented reality, artificial intelligence, mobile applications, smart TV, social media integration, and data analytics. Adopting and implementing these

trends into reference service delivery made the librarians deliver prompt, concise, and relevant information to their clientele.

The instances were given on how the users interact with relevant information provided by librarians through Virtual Reality (VR) and Augmented reality (AR). Librarians leverage VR and AR to enhance digital reference service delivery by creating immersive and interactive environments for users to explore. Through VR, for example, users can virtually visit historical sites, explore distant locations, or even step into the pages of a book. On the other hand, AR overlays digital information in the real world and allows users to access additional details and context. The use of VR and AR in libraries has shown promising results as it enhanced user engagement and satisfaction<sup>122</sup>. Another study investigated the use of VR in academic libraries and discovered that it improved the learning experience for students. Adopting new waves of technology into library systems, particularly in tertiary institutions, has broken a barrier among the library clientele, as it provides users with unique and immersive experiences, fostering a deeper connection with information.

ChatBot and artificial intelligence (AI) have gained significant attention in recent years due to their ability to provide instant and personalised assistance to users. Librarians develop and employ chatbots as virtual reference assistants to provide instant responses and allow users to interact with them through messaging platforms or websites. These intelligent systems can answer common questions, provide recommendations, and assist users in navigating library resources. The study explored the implementation of AI chatbots in academic libraries and found that they improved user satisfaction and reduced response time<sup>32</sup>. Similarly, a study investigated the use of chatbots in public libraries and reported positive user feedback

regarding the convenience and efficiency of the service. Adapting chatbots and AI into digital reference services delivery across the various tertiary institutions provided round-the-clock support and enhanced user experiences<sup>111</sup>.

Furthermore, librarians also use mobile applications, with the ubiquity of smartphones, to deliver digital reference services directly to users' devices. Mobile apps can access library catalogues, e-books, databases, and real-time reference assistance. These applications can also send push notifications to users, informing them about new resources, upcoming events, or important announcements. A study investigated the adoption of library mobile apps and found that they significantly improved users' access to library services and resources<sup>112</sup>. Another study explored the impact of mobile apps on user satisfaction in academic libraries and reported positive feedback regarding the convenience and ease of use. By developing mobile applications for digital reference services delivery, most information users have a library in their pockets<sup>113</sup>.

Social Media Integration (Social media platforms) has become integral to our daily lives, providing opportunities for librarians to reach and engage with users in new ways. Librarians integrate social media into their digital reference services delivery by creating dedicated accounts/pages to share updates, answer questions, and promote library resources. These platforms also serve as channels for users to provide feedback, share experiences, and connect with library users. A study examined the impact of social media on user engagement in public libraries and found that it positively influenced users' perception of library services<sup>114</sup>. Similarly, a study explored the use of social media in academic libraries and reported increased user engagement and collaboration. Integrating social media platforms into DRSD gave

librarians a broader coverage to reach, foster community engagement, and provide personalized assistance to users through direct messaging or comments<sup>115</sup>.

Data analytics and personalization techniques can significantly enhance the effectiveness of digital reference services. Librarians gained insights into users' preferences, behaviours, and information needs by collecting and analysing user data. It allows librarians to tailor their services and recommendations to individual users, creating a more personalized and engaging experience. A study investigated the use of data analytics in academic library reference services and found that it improved the accuracy and relevance of search results<sup>116</sup>. Another study explored personalized recommendation systems in public libraries and reported increased user satisfaction and engagement. By harnessing the power of data analytics, librarians provided targeted recommendations, suggested related resources, and offered personalized assistance, ultimately enhancing the digital reference service delivery<sup>117</sup>.

With their interactive capabilities and diverse functionalities, intelligent televisions have emerged as a powerful tool in transforming the digital reference service delivery landscape to the clientele. Smart televisions, also known as connected TVs, have revolutionized the traditional viewing experience by integrating internet connectivity and interactive features. These devices offer access to a wide range of online content, applications, and services, making them a powerful medium for delivering digital reference services in tertiary institution libraries. Integrating intelligent televisions (smart TVs) in libraries opens new possibilities for engaging with users and providing seamless access to information. Libraries worldwide are embracing the potential of intelligent televisions to transform their reference services. Strategically placing these devices in critical areas, such as circulation desks or common areas,

which are the first contact of the library, will provide patrons instant access to a wealth of digital resources, interactive displays, and real-time assistance<sup>118</sup>.

*Quote: "The integration of smart televisions in libraries not only transforms how users access information but also provides a unique opportunity to create interactive and personalised experiences that cater to diverse learning styles and preferences."  
Dr. Jane Smith, Library Technology Expert.*

One of the critical advantages of intelligent televisions in digital reference service delivery is their ability to provide interactive displays and content. With touch-screen capabilities and intuitive user interfaces, intelligent televisions offer library users a dynamic and engaging experience. Users can navigate through digital resources, explore multimedia content, and interact with interactive educational materials, all through the visual and tactile interface of the intelligent television. Smart televisions enable libraries to seamlessly integrate their vast collection of resources into the digital reference service delivery<sup>67</sup>. Through dedicated applications or web-based interfaces, users can access e-books, scholarly articles, databases, and other digital resources directly from the intelligent television. This integration ensures that users have instant and convenient access to information, enhancing their research and learning experience.

Smart televisions can utilise artificial intelligence algorithms and machine learning techniques to analyse user preferences and behaviour, allowing them to provide personalised recommendations and suggestions<sup>119</sup>. By understanding the user's interests, browsing history, and search patterns, smart televisions can curate tailored content and suggest relevant resources, enhancing the discoverability of information and promoting serendipitous learning experiences. The ability of intelligent televisions to offer interactive displays, seamless integration of

resources, and personalised recommendations significantly enhances the user experience in digital reference service delivery. Users can engage with content in a more immersive manner, access a wide range of resources effortlessly, and receive personalised assistance, making their information-seeking journey more efficient and enjoyable<sup>120</sup>.

Therefore, librarians can embrace emerging digital reference service delivery trends to enhance user knowledge and meet their evolving needs. By incorporating all the aforementioned, libraries can create innovative and personalised digital reference services.

### **2.3.2 Critical Thinking Skills and Digital Reference Service Delivery (DRSD)**

Critical thinking skills are the cornerstone of accurate information providers on digital reference service delivery. Providing innovative abilities and adequately empowering librarians to discharge accurate and reliable digital reference services to their clientele across their locations. Critical thinking skills enable librarians to render personalised assistance, answer queries with induction and deduction reasoning, and make brilliant judgment decisions. Most importantly, critical thinking skills empower the librarians to evaluate the source of information, instilling a sense of responsibility and diligence. Critical thinking skills are the foundation for academic research success and professional competence, and they are a catalyst for personal growth and development. It is a vital indicator of a librarian's ability to navigate complex queries, evaluate information, and make informed decisions about the effectiveness of quality digital reference service delivery. It also navigates database errors and resolves access problems for effective and efficient digital reference service delivery for its clientele<sup>121</sup>.

Critical thinking skills facilitate collaboration among librarians, subject experts, and stakeholders and play a significant role in fostering a culture of continuous learning. This continuous learning is essential for librarians to stay updated on innovations, technologies, and resources. Critical thinking skills pave the way for innovation and are the key to unlocking the potential growth and progress in digital reference service delivery and library service generally. It enables librarians to evaluate the credibility of sources, recognise the assumption of information, and provide context to users<sup>122</sup>. Moreover, critical thinking skills promote continuous learning and professional development, essential for librarians to stay updated on innovations, technologies, and resources.

The importance of critical thinking skills for librarians in delivering effective digital reference services has been well-documented in the literature. Researchers have consistently emphasised the central role of these essential aptitudes in facilitating collaboration, driving innovation, and promoting continuous learning and professional development. The study underscored that critical thinking skills are fundamental in fostering cooperation among librarians, subject experts, and stakeholders. By approaching challenges with a critical mindset, librarians can effectively communicate, synthesise diverse perspectives, and work cohesively to devise innovative digital reference service delivery that caters to their users' evolving information needs<sup>99</sup>. Upon this, the study highlighted how critical thinking skills empower librarians to navigate the complexities of the contemporary digital information landscape. These skills equip them to meticulously evaluate online information sources' credibility, reliability, and validity before making them available to their clientele. It also ensures that the information shared is relevant and trustworthy, reinforcing the library's position as a trusted, authoritative source of knowledge.

Furthermore, the importance of critical thinking skills in digital reference service delivery enables library professionals to move beyond mere information retrieval and instead provide value-added services that address the nuanced needs of their patrons. By exercising logical reasoning and synthesizing disparate data points, they can deliver personalized assistance and make sound judgments that enhance their clientele's overall experience and satisfaction<sup>91</sup>. In an era of information overload, critical thinking skills empower librarians to filter, organize effectively, and curate information resources for easy digestion of their clientele. It also creates seamless, user-friendly digital reference services by thoughtfully selecting and structuring digital content<sup>123</sup>.

The study underscores the pivotal role of critical thinking skills in the continuous learning and professional development of librarians. By consistently questioning, reflecting, and adapting their methods, they can keep pace with the latest innovations, technologies, and resources pertinent to digital reference service delivery. This not only enhances the quality and responsiveness of the library's offerings but also fosters a culture of innovation and user-centricity. A high level of critical thinking skills equips librarians to deliver practical, innovative, and user-centric digital reference services, thereby elevating the quality, impact, and value of these services. The necessity of librarians' critical thinking skills for digital reference service delivery cannot be overstated. It is essential and crucial in providing high-quality digital reference services in the modern academic landscape.

Digital reference service, which refers to the provision of reference services via digital means such as email, web page, or real-time chat, is an essential and effective resource for meeting the information needs of community users in today's digital age. This service allows

information seekers to sit in the corner of their rooms and navigate the library web page or chat with librarians in their comfort zone. Users can navigate and access various information resources with the help of a librarian without leaving their place. A study revealed that the critical thinking skills of librarians are influential and necessary for their digital reference service delivery. Specifically, librarians' analytical, evaluative, and inferential skills, ability to effectively respond to user inquiries, provide accurate and reliable information, and use digital tools and technologies are crucial in overcoming the challenges of digital reference service delivery<sup>124</sup>.

Synchronous and asynchronous modes of communication, such as email, web pages, text messaging, real-time chat, and social media platforms, are communication tools used by librarians to provide effective and efficient digital reference service delivery. However, another study pointed out several inherent limitations in delivering digital reference services through these modes. For instance, the major drawback of accepting reference queries by email or web page is the nature of asynchronous interaction, in which librarians cannot interview users in real-time chat. Instead, using email to communicate and interchange questions and answers for clarification usually results in a substantial delay in responding.

Additionally, critical thinking skills improve the librarians' digital reference service delivery through email, web pages, real-time chat, social media platforms, video conferencing, Voice over Internet Protocol (VoIP), and online discussion. The study shows that online discussions can stir users' inquiry and create a context for collaborative learning, promoting reflection and critical thinking. Using Facebook and WhatsApp for digital reference service delivery can enhance librarians' critical thinking skills by allowing them to recognise and evaluate

assumptions and draw logical conclusions. However, another study reveals that critical thinking skills can be improved through various digital communication tools in digital reference services, which is compelling but requires a more nuanced examination. This suggests that online discussions have the potential to "stir users' inquiry and create a context for collaborative learning, promoting both reflection and critical thinking"<sup>125</sup>.

Integrating synchronous and asynchronous such as email, web chat, social media, and video conferencing does not inherently foster critical thinking abilities among librarians. Nevertheless, the effectiveness of these digital platforms in enhancing critical thinking depends on how they are leveraged and integrated into the overall reference services delivery. For instance, social media platforms like Facebook and WhatsApp could allow librarians to recognise assumptions, analyse and evaluate them, and draw logical conclusions. However, without continuous professional development and organisational policies that prioritise the development of critical thinking, problem-solving, and decision-making abilities, the integration of communication technologies may become a mere means of information dissemination rather than a platform for engaging users in the higher-order cognitive processes that define critical thinking.

Ultimately, the effectiveness of digital reference service delivery in improving critical thinking skills among librarians hinges on implementing a holistic approach that utilises communication technologies and emphasises the cultivation of these essential aptitudes. A strong focus should accompany integrating digital tools to enhance critical thinking skills across the various platforms employed in reference services. Furthermore, the study highlighted the importance of continuous professional development and training programs to help librarians strengthen their

critical thinking skills and stay abreast of the latest trends and best practices in digital reference service delivery. In addition, comprehensive training initiatives and a supportive organisational culture will encourage developing and applying critical thinking skills among librarians.

The primary challenge in developing critical thinking skills for digital reference service delivery is the rapid pace of technological change. The digital landscape constantly evolves, with new tools, platforms, and best practices emerging rapidly. Librarians must continuously learn, adapt, and update their skills to effectively navigate and leverage these digital resources<sup>126</sup>. Additionally, the complexity of online information can be overwhelming, necessitating advanced critical thinking skills to effectively evaluate, synthesise, and provide relevant information to library clientele. Librarians must be able to think critically about the credibility, accuracy, and relevance of online sources to ensure the quality of the digital reference services they provide.

Another challenge is the shift from traditional, in-person reference services to virtual, technology-mediated interactions. This transition requires librarians to develop new communication skills, such as interpreting and responding to user inquiries in a digital environment, where nonverbal cues and contextual information may be limited. Furthermore, library users' diverse backgrounds and information needs can challenge librarians to develop critical thinking skills. They must be able to empathise with and tailor their responses to each user's unique requirements while maintaining high professionalism and objectivity.

Additionally, organisational factors, such as a lack of professional development opportunities, limited resources, or an unsupportive institutional culture, can hinder librarians' development of critical thinking skills. Addressing these organisational challenges is crucial for fostering an

environment that encourages and supports the continuous growth and application of critical thinking skills. To overcome these challenges, library administrators should invest in comprehensive training programs, ongoing professional development, and mentorship opportunities that focus on developing the critical thinking skills necessary for effective digital reference service delivery.

Finally, creating a culture of innovation, collaboration, and continuous learning can help librarians stay at the forefront of technological advancements and deliver high-quality, user-centred digital reference services. The review underscores the crucial role of critical thinking in enhancing the digital reference service delivery of librarians in tertiary institutions in Ekiti State. By fostering a culture of critical thinking, library administrators can empower their staff to provide more effective, efficient, and user-centred digital reference services, thereby highlighting the importance of this skill and ultimately improving the overall library experience for their patrons.

### **2.3.3 Social Media Use (SMU), Critical Thinking Skills (CTS) and Digital Reference Service Delivery (DRSD)**

Social media, a tool that has become ubiquitous in today's society, is not just a platform for social interaction but also a potential game-changer in digital reference services. Its widespread use has fundamentally altered how we access, share, and retrieve information, and librarians are now beginning to tap into its power. The proliferation of social media has opened up new avenues for delivering digital reference services, offering a broader reach and more immediate support. The transformative impact of social media on the future of library and information science is an exciting prospect that should fill us with optimism for what is to come.

Social Media Use (SMU) is an effective tool for providing digital reference services delivery as it allows librarians to connect with a broader community of users and offer real-time assistance<sup>127</sup>. However, users' queries often require more than a quick response due to the brevity and casual interaction on social media platforms. Therefore, librarians' continuous development in the use of social media and application of critical thinking skills in digital reference service delivery are beneficial and crucial in today's information age. These skills are necessary for crafting thoughtful and comprehensive responses that address the complexity of patrons' queries. Critical thinking ensures that librarians not only grasp the surface-level question but also delve deeper to comprehend the underlying information needed and provide an accurate and helpful response that goes beyond the initial query and addresses the nuances of the patron's information requirements<sup>128</sup>.

Studies suggest librarians should develop critical thinking skills when engaging with users through social media platforms to deliver digital reference services. The brevity and informality of communication can obscure the true nature of the information needed. Critical thinking skills enable librarians to analyse the assumptions and implications underlying the user's request, evaluate the relevance and reliability of the sources of information before they are shared, and draw logical conclusions that address the patron's concerns comprehensively.

Furthermore, social media use, such as email, online discussion, real-time chat, and video conferencing, allows librarians to deliver digital reference services and promotes collaboration and interaction among colleagues and their clientele. Online discussions and real-time chat can create a context for collaborative learning, encouraging reflection and the exchange of diverse perspectives. This can help librarians sharpen their critical thinking abilities and apply them

more effectively in digital reference service delivery. The real-time nature of SMU enables prompt responses to user queries, promoting social interaction and 24/7 access to information resources. This unrestricted access transcends physical boundaries, creating a dynamic platform for knowledge exchange and community engagement. It provides compelling evidence in support of the transformative impact of SMU in libraries. By harnessing the power of social media, librarians can enrich user experiences, foster inclusivity, and cultivate a vibrant online community dedicated to knowledge sharing and collaboration.

However, several studies have highlighted the benefits of using social media platforms and critical thinking skills to enhance digital reference services. For example, the research found that critical thinking skills ease social media usage by improving the communication skills of librarians and engagement with library users, leading to more efficient and effective digital reference services<sup>129</sup>. Another study says social media and critical thinking skills facilitate real-time communication and immediate responses to user queries, enhancing the overall user experience and satisfaction with digital reference services<sup>130</sup>. Other studies stress that critical thinking skills allow librarians to evaluate the source of information obtained through social media platforms. The study also emphasised the role of essential thinking skills on social media use in expanding outreach efforts and reaching a wider community of users, particularly individuals who may face physical limitations in accessing traditional library services<sup>123</sup>.

Librarians' effective use of social media to deliver digital reference services depends on their ability to develop and apply critical thinking skills to answer users' queries. Thus, librarians can navigate the complexities of social media interactions, provide short and comprehensive information and thoughtful responses, and ultimately enhance the quality of digital reference

service delivery. Moreover, social media platforms often prioritise brevity over accuracy, perpetuating misinformation and reinforcing existing biases. This is a significant risk in the context of digital reference services delivery, where the accuracy and reliability of information are paramount. Therefore, librarians play a crucial and empowering role in evaluating the credibility of sources and promoting media literacy among patrons.

By doing so, they can foster critical thinking skills in patrons and empower them to navigate the digital information landscape effectively, thereby addressing the issue of misinformation and bias. This empowerment is a significant responsibility that we all share, underscoring the vital role of librarians in the digital age. Librarians use social media to transform how they interact, share information, access users' queries, and display their knowledge to the community of users. Social media platforms ease their dependence on traditional reference service delivery, and critical thinking allows librarians to assist their users by providing them with relevant, accurate, and reliable information resources and sources<sup>82</sup>. Similarly, librarians believe social media use will foster their critical thinking skills, allow them to reach a wider community of users within Twinkle's eyes, and give them opportunities to be relevant in their profession.

However, the innovation of social media use on digital reference services raises important questions about privacy, intellectual freedom, and the digital divide. As librarians navigate these complexities, they must remain committed to upholding the profession's core values, including confidentiality, inclusivity, and social responsibility. Upholding these values is essential and crucial in maintaining the profession's integrity in the digital age. We all are committed to professional integrity, which should reassure us of our ability to navigate these

complexities confidently and feel reassured about our commitment to professional values. The convergence of social media, critical thinking skills, and digital reference services present librarians with opportunities and challenges for meeting the needs of digital-age information users. By effectively leveraging social media platforms and promoting critical thinking skills, librarians can enhance the quality and reach of reference services while upholding the highest standards of professional practice.

Despite the numerous benefits and widespread availability of Social Media Use (SMU) and Critical Thinking Skills (CTSs) in digital reference service delivery, it's crucial to acknowledge the global digital divide. Not all users have equal access to smartphones, computer systems, technology, or the internet, which, coupled with unreliable power supply, can limit the reach of SMU initiatives. Moreover, the direct communication and real-time interactions facilitated by SMU platforms can raise privacy concerns about shared data. Users may hesitate to engage due to these privacy and security issues fully. Additionally, while SMU enables the creation and sharing of information resources, ensuring the quality and accuracy of these resources can be challenging. Misinformation or unreliable sources may proliferate in digital environments due to the information explosion.

Librarians must have critical thinking skills to utilise SMU tools and platforms effectively. This often requires extensive training, and without adequate support from management and accessible resources, the full potential of SMU may not be realised. The study revealed that traditional reference service delivery is insufficient in an era of information explosion. To effectively meet users' information needs, digitalising resources and applying critical thinking skills in digital reference service delivery are paramount. Librarians must continuously review

their information and reference services delivery process to ensure timely and accurate information. Digital reference service delivery is a powerful method of matching users with reference information resources and sources in a digital environment. Still, it requires ongoing professional development to be effective.

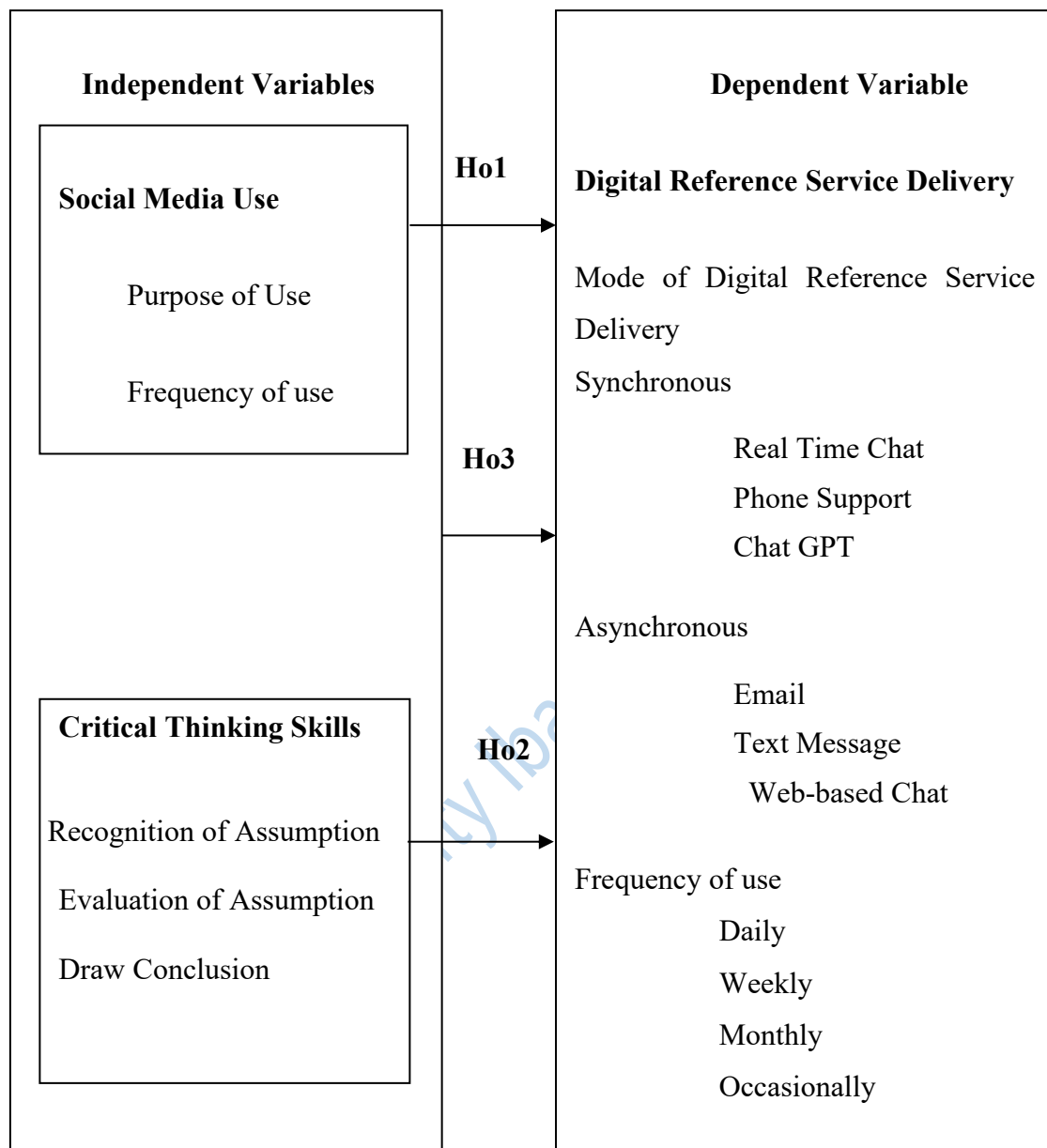
The study shows how crucial DRSD is in the library, providing a free flow of information through the SMU. This service is mainly in direct contact with the public. Therefore, digital reference service delivery directly assists users seeking information on library websites to provide them with the relevant information resources and sources that meet their information needs<sup>131</sup>. Digital reference service delivery is an aspect of library services in which contact between the user and library information resource is established through librarian assistance. By leveraging SMU platforms and critical thinking, librarians can effectively streamline communication, share diverse information resources, and monitor service trends. This fosters direct engagement with users and enables costless services, thereby democratizing access to information<sup>89</sup>. It also allows immediate responses to user queries through real-time communication, facilitating social interaction, 24/7 access to information resources, and digital reference service delivery without constraints.

Moreover, SMU serves as a vital tool for extending library services to marginalised groups such as the physically challenged or elderly individuals confined to their homes. In countries like India and Korea, SMU facilitates outreach programs and mobile library services, ensuring inclusivity and accessibility for all users. SMU can quickly reach a wide range of users without physical limitations, providing a significant platform for engaging in discussions, expressing viewpoints, and sharing ideas with the broader community. The wide spread of information

through social media has given critical thinking skills, and heuristic thinking is the key to 21st-century problem-solving. Critical thinking related to communications via social media is an individual weapon in mitigating hoax circulation and impact. It was proposed that expertise, which is very important in an era of rapid change, is paramount in evaluating and validating a source or proving/disproving information<sup>132</sup>. Evaluating a source is far more effective than relying on algorithms.

The role of librarians in tertiary institutions is crucial in supporting teaching, learning, and research activities. Librarians must possess Critical Thinking Skills (CTSs) to fulfill their responsibilities effectively. This literature review explores the existing literature on the critical thinking skills of librarians in tertiary institutions. The review will provide an overview of the importance of critical thinking in the library context and highlight the current research and findings in this area.

## **2.4 Conceptual Framework**



The conceptual framework of this study reflects the constructs by which each variable measured. The study consists of two independent variables: Social Media Use (SMU) and

Critical Thinking Skill (CTS). SMU consists of purpose, frequency of use, cognitive and affective (attitude of librarians and users in SMU), and gratification (social interaction, feedback, and motivation). Critical Thinking Skill (CTS) consists of recognizing assumptions, evaluating information or arguments, and drawing conclusions. The dependent variable is digital reference service delivery through synchronous and asynchronous. Synchronous consists of phone calls, Instant Messages, live chat support, ChatGPT, librarians Robot, social media platforms, etc., and asynchronous consists of email, online forms, discussion forums, web-based chat, text messages, video recording via cloud, Frequent Ask Questions (FAQ), etc.), frequency of using digital reference service (daily, weekly, monthly, or occasionally).

The independent variables will likely influence the dependent variable of digital reference service delivery in tertiary institutions. Thus, digital reference service delivery may be influenced by any of the two independent variables (SMU & CTS) individually or could jointly influence the digital reference service delivery. Hence, librarians' change in digital reference service delivery could be accounted for by the variance of any of two or all of the independent variables. Therefore, the model supports that a relationship could exist between and among the various models as they interact.

## **2.5 Summary of Literature Review**

Several relevant literatures have been critically reviewed. The study explores the influence of social media use, critical thinking skills, and digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. It examines existing research, theories, and practices for its comprehensive analysis. The review begins by discussing the increasing prominence of social media platforms in the digital age and their impact on communication and information

sharing. It highlights the potential benefits of social media in facilitating engagement, collaboration, and outreach within library settings.

Relevant studies, such as the work on the impact of social media on user engagement in public libraries, provide insights into librarians' use of social media. Types of SMU, Awareness of SMU by librarians, and Challenges encountered in SMU by librarians; these themes from the literature influence the SMU for the provision of digital reference services delivery in tertiary institution libraries in a broader sense. The literature and empirical reviews addressed the research questions and questionnaire structure.

The review also focuses on the importance of critical thinking skills in digital reference service delivery. It explores the role of librarians as information professionals and the need for them to possess strong critical thinking skills to evaluate and assess information sources effectively. The study on data analytics in tertiary institution library reference services illustrates the significance of critical thinking in the digital reference process.

Furthermore, the literature review examines the existing literature on integrating social media and digital reference services in library settings. It discusses the potential benefits and challenges of utilizing social media platforms for reference service delivery. The work on the design and implementation of an AI-based chatbot for tertiary institution libraries is referenced to highlight the evolving nature of digital reference services. The review concludes by emphasizing the urgent need to explore the relationship between social media use, critical thinking skills, and digital reference service delivery of librarians in tertiary institutions, Ekiti State, Nigeria, underlining the importance of further research in this area.

Regarding the theories used, the empirical literature review shows that most existing studies on SMU by librarians lack theoretical underpinnings. This is corroborated by the scholar who asserted that research in librarianship makes many flawed assumptions because it lacks a theoretical basis and the testing of relationships between variables. Therefore, this study filled this gap by adopting three theoretical frameworks.

Theory (DoIT) by Moore & Benbasat, 1991 discusses the innovation adopted in DRSD among librarians and library users in tertiary institutions. The Uses and Gratification (U&G) theory by Zohoorian-Fooladi & Abrizah, 2012 addressed the SMU. It measured the purpose and frequency of librarians' use of social media in tertiary institution libraries. At the same time, the RED Critical Thinking model by Watson and Glaser (1980) explains the level of critical thinking skills of librarians in using social media for digital reference service delivery.

The Diffusion of Innovation, Uses and Gratification Theory (U&G), Critical Thinking Model (RED), and Innovation Diffusion Theory (IDT) are the three theories that underpinned this study. They complemented one another in understanding the adoption and implementation of SMU for the provision of digital reference service delivery and the level of critical thinking skills of librarians in searching and evaluating relevant social media platforms that was more useful for the provision of digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. These three (3) theoretical models (U&GT, critical thinking model (RED), and IDT) have been selected because they have meaningful analytical power. They detailed the principal variables of the study, namely SMU purpose, SMU frequency, SMU adoption, SMU behaviour, information seeking, social exchange, SMU motivation, and gratification. The other constructs from the three models studied include recognition of

assumption, evaluation of information, drawing a conclusion, synchronous and asynchronous, and frequency of use.

Regarding research methodology, the literature revealed that the survey method employed for the present study was the most commonly used to determine the use of SMU, CTS, and DRSD in tertiary institution libraries. However, most of the studies reviewed employed a single approach, which is predominantly quantitative. This study also used a quantitative data collection and analysis method to address this gap. Identifying the research gap will emphasize the influence of social media use, critical thinking skills, and digital reference service delivery. The study emphasizes the significance of conducting empirical studies to examine the impact of social media use and critical thinking skills on digital reference service delivery in tertiary institutions.

Previous studies have examined the use of social media in libraries and the importance of critical thinking skills in digital reference service delivery. However, there is a research gap in investigating this influence in the specific context of librarians in tertiary institutions in Ekiti State, Nigeria. This research gap is crucial because it allows a deeper understanding of how social media use and critical thinking skills influence digital reference service delivery in tertiary institution libraries. A study highlights the lack of empirical studies focusing on the specific context of librarians in Ekiti State, Nigeria. This gap presents an opportunity to address the unique challenges, needs, and opportunities librarians face in these institutions<sup>134</sup>. By examining the influence of social media use, critical thinking skills, and digital reference service delivery, we can provide valuable insights that can inform the development of effective

strategies and interventions to enhance the quality of digital reference service delivery in Ekiti State.

The study highlights social media use among librarians and the challenges librarians face in tertiary institutions in Ekiti State, Nigeria. Examining the existing practices provides a foundation for understanding the role of social media in their professional activities. This citation serves as a starting point for the study, as it sets the stage for exploring the relationship between social media use and digital reference service delivery.

Another study focuses on enhancing critical thinking skills among librarians in tertiary institutions, specifically in Ekiti State University Library. This provides insights into the importance of critical thinking skills for librarians and their role in delivering effective reference services. So, the study draws upon this to understand the significance of critical thinking skills in the digital reference service context and its potential impact on service quality. Considering these research gaps, the study can investigate the influence of social media use, critical thinking skills, and digital reference service delivery among librarians in tertiary institutions in Ekiti State, Nigeria. The findings from the study will contribute to the body of knowledge in this specific context and inform future practices and interventions to improve digital reference service delivery.

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## **Chapter Three**

### **Methodology**

This chapter deals with the method used to investigate the social media use, critical thinking skills, and digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. It detailed the instrument adopted to achieve the set objectives. Some of the instruments are but not limited to the following: research design, the population of the study, computation of sampling size and sampling technique, sources of research data, research instrument, validity and reliability of the instrument, method of data collection, data analysis, and ethical considerations.

#### **3.1 Research Design**

The study adopted a survey research design. A survey research design aims to gather information about a particular group or population<sup>1</sup>. The study employed a mixed-methods research design, combining qualitative and quantitative data collection and analysis methods. The qualitative research design was used to interview the five (5) heads of tertiary institution librarians in Ekiti State. The aim of this is to explore the participants' experiences and perspectives on the influence of social media use on the digital reference service delivery of their librarians. The quantitative research design was use to administer a questionnaire to collect data from a larger sample size of librarians in tertiary institutions in Ekiti State.

The tertiary institutions were grouped into Federal tertiary institutions, State tertiary institutions, and Private tertiary institutions, while the sample was selected from the following clusters using a total enumeration sampling technique for the population. In all, five (5) tertiary institutions were selected: a federal tertiary institution, two (2) state tertiary institutions, and two (2) private tertiary institutions. This method helped the researcher to have a rich, more

profound, and nuanced understanding of the research topic. Most importantly, it allows for an accurate representation of the variables under study and the interplay between them and prevents the manipulation of results by the researcher.

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

The population of the study was one hundred and forty-five (145) librarians, including the head of each tertiary institution librarians who work in tertiary institutions in Ekiti State, Nigeria. The population size is presented according to the number of librarians in selected tertiary institutions. five (5) University Librarians (UL), five (5) librarians from Bamidele Olomilua University of Education, Science and technology Ikere-Ekiti (BOUESTI), seventy (70) librarians from Ekiti State University (EKSU) Ado-Ekiti, twenty (20) librarians from Afe Babalola University (ABUAD), Ado-Ekiti, forty (40) librarians from Federal University Oye-Ekiti, Oye-Ekiti, and five (5) librarians from Venite University Iloro-Ekiti (VUI), Ekiti State, Nigeria. Across the state, there is a federal tertiary institution, two state tertiary institutions, and five (5) private institutions, the most popular of which was one out of five (5) private institutions used for this study.

This population will serve as the foundation for the sample selection process, which was conducted using a total enumeration sampling technique. By selecting participants with the necessary knowledge and experience in Social Media Use, Critical Thinking Skills, and Digital Reference Services, this study ensured that the data collected accurately represents the target population and provides valuable insights into the research objectives. The data is presented in Table 3.1

**Table 3.1. A population sample size of librarians in tertiary institutions in Ekiti State, Nigeria.**

S/N	Name of Tertiary Institutions	University Librarians	Professional Librarians
1.	Bamidele Olomilua University of Education, Science and technology, Ikere-Ekiti	1	5
2.	Ekiti State University, Ado-Ekiti	1	70
3.	Afe Babalola University, Ado-Ekiti	1	20
4.	Federal University Oye-Ekiti	1	40
5.	Venite University	1	5
<b>Total</b>		<b>5</b>	<b>140</b>
<b>Grand Total</b>		<b>145</b>	

*Source: from the office of University librarians<sup>2</sup>*

### 3.3 Sampling Size and Sampling Techniques

The sample size of the study is all the one hundred and forty-five (145) librarians in tertiary institutions in Ekiti State, including five (5) University Librarians, and one hundred and forty (140) librarians from the five (5) selected tertiary institutions in Ekiti State who constitute a hundred and forty-five sample size for the study. Sampling is a process that allows a researcher to scientifically choose a subset of who or what to include in an investigation<sup>3</sup>. It believes that sampling involves selecting strata (individuals, organizations, objects) from a population so that one may somewhat generalize the results of a study<sup>4</sup>. The study adopted total enumeration sampling techniques (census) because it allows all the strata in a population to participate. It involves using all elements in a population to constitute the sample size. This is done when the population of a study is small, manageable, and controllable.

### 3.4 Research Instruments

The main instrument used for the study is a questionnaire titled Questionnaire on Social Media Use, Critical Thinking Skills, and Digital Reference Service Delivery of Librarians in Tertiary Institutions in Ekiti State, Nigeria. The instrument was adopted from various validated and tested studies. Four validated instruments was used to collect data in this study, which is divided into sections A-D as follows,

**Section A:** Demographic information: age, gender, institution name, post, and years of experience through closed-ended questions. All instruments will demonstrate adequate reliability and validity, as reported below.

**Section B:** this section deals with librarians' digital reference service delivery. The researcher will develop the Digital Reference Service Delivery Quality Scale by reviewing the literature on quality standards and consultation with library and information science experts. It contains twenty-five items that measure dimensions of effective digital reference service delivery, including frequency of use, clarity, accuracy, completeness, and timeliness. It has a five-point Likert scale type. The response format of factors that brings about motivational factors is: Strongly Agree (SA); Agree (A); Disagree (DA); Strongly Disagree (SDA). Examples of likely questions are: My institution libraries use email to provide digital reference service delivery, and web-based chat is an effective tool for digital reference service delivery.

**Section C:** Social Media Use Scale (SMUS) is a comprehensive tool that captures the frequency of social media use across five major platforms, namely Facebook, WhatsApp, Instagram, Thread, and Google Chat. It utilizes a 5-point Likert scale, ranging from 5 to 1: Very Frequently (VF); Frequently (F); Very Often (VO); Often (O); Never (N). It is adapted from existing measures to capture respondents' usage patterns<sup>5</sup>. The SMUS consists of twenty-

five items that assess various aspects of social media engagement. These items encompass the frequency of use, the purpose of use, the cognitive and affective dimensions of librarians and their patrons, social interaction, feedback, and motivation, adapted from existing literature<sup>6</sup>. Using a Likert-scale format, the SMUS provides respondents with various options to indicate the extent of their social media usage<sup>7</sup>. This allows a more nuanced understanding of the librarian's and patrons' behaviours and attitudes toward social media platforms. Adapting the SMUS from existing measures ensures that it builds upon established research and theory in social media use. Additionally, the piloting phase helps to validate the instrument and refine its items to enhance its reliability and validity. Examples of questions are: how often do you use social media to deliver digital reference service? I do use social media to provide reference services.

**Section D:** Critical Thinking Skills of Librarians. The California Critical Thinking Skills Test (CCTST) was used to assess librarians' critical thinking skills objectively. California Critical Thinking Skills Test is a standardized and widely used validated tool to measure critical thinking skills across various domains. It contains thirty-four (34) items of choice questions such as assessing, analysis, evaluation, inference, deductive and inductive reasoning. It has a five-point Likert scale type. The response format of factors that brings about motivational factors is: Strongly Agree (SA), Agree (A), Not Aware (NA), Disagree (DA), and Strongly Disagree (SDA). Examples are: I can identify bias in users' queries and carefully evaluate assumptions from different perspectives.

**Section E:** The interview schedule would seek information on 1. What do you understand by digital reference services delivery? 2. What digital reference services delivery mode are you adopting in your library? 3. How often do you use digital reference services 4. What is the level of social media use in your institution's library? 5. What are the most frequent social

media platforms you use in your library? 6. For what purpose does social media benefit your institution's library? 7. What do you understand by critical thinking skills? 8. What do you understand by critical thinking skills? 9. How do you evaluate the credibility of online sources for digital reference services delivery in your tertiary institution library?

### 3.5 Validity of the Research Instrument

To ensure face and content validity, the adapted measuring instrument was given to the supervisor and another lecturer in the Department of Library and Information Science of Lead City University, who will check its accuracy and precision. The instrument was modified to achieve the research objectives based on the experts' criticisms and corrections.

### 3.6 Reliability of the Research Instrument

Reliability means the ability of a research instrument to consistently return the same results when administered to a similar population. The questionnaire draft was pre-tested on twenty (20) librarians at Tai Solarin University of Education, Ijagun, Ijebu-Ode, Ogun State, Nigeria, who were not part of the study sample size but share similar characteristics with the study population. The Cronbach alpha reliability method was used at 0.05 significance levels to test the questionnaire's reliability.

**Table 3.2 Reliability Study Analysis**

S/N	Constructs	Cronbach Alpha Score
1.	Digital Reference Service Delivery	0.75
2.	Social Media Use	0.85
3.	Critical Thinking Skills	0.88

**Source: Pilot Study, 2023**

### **3.7 Method of Data Collection**

A letter of introduction was collected from the Head of the Department of Information Management, Lead City University, Ibadan, to gain permission to survey the librarians of the selected tertiary institutions. The questionnaire was administered physically with the assistance of two research assistants, with whom the researcher was trained for seven days; data collection took about two weeks, and analysis took eight weeks.

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

Descriptive statistics was used to analyse the data. Descriptive statistics tools involving frequency count and percentage were presented in tables where appropriate. They were used to describe the demographic characteristics and to answer the study research questions 1 and 4. Thematic content analysis was used to analyse interview output from the head of tertiary institution Librarians. Linear regression analysis was used to test hypotheses 1 and 2 to determine the influence of the independent variables on the dependent variable. Hypothesis three (3) was tested using multiple regressions. The entire Hypothesis was tested at a 0.5 level of significance.

## Endnotes

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- 2 Population Data of Librarians of the Five (5) Tertiary Institution Used for the Study Sourced from their Respective Head (University Librarians) Office
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## Chapter Four

### Results and Discussion of Findings

This chapter presents the analysis and results of the data collected and analysed during this study. The data were obtained to answer the research questions and test the hypotheses formulated for the study. The decision rule is that all items with a mean score equal to or greater than 3.5 are considered significant, and any item with a means score of less than 3.5 is considered not significant and rejected. Also, hypotheses are tested at a 0.05 level of significance, implying that any result above 0.05 implies the hypothesis was rejected.

In all, a hundred and thirty-nine (139) copies of the questionnaires were administered, and 105 were retrieved due to the new schedule of works in Ekiti State that prevented the researcher from meeting some of the respondents in their various tertiary institution libraries. Despite this, the researcher interviewed five (5) selected heads of tertiary Institutions' libraries in Ekiti State, Nigeria.

**Table 4.1: Questionnaire Return Rate**

S/N	Name of Institution	Frequency	Percentage
1.	Bamidele Olomilua University of Education, Science and Technology, Ikere-Ekiti	1	0.9
2.	Ekiti State University Ado-Ekiti	50	47.6
3.	Afe Babalola University Ado-Ekiti	16	15.2
4.	Federal University Oye-Ekiti	35	33.3
5.	Venite University	3	2.9
<b>Total</b>		<b>105</b>	<b>100</b>

**Source: Fieldwork Survey Result, 2024**

#### 4.2 Presentation of Demographic Data Analysis of Respondents

**Table 4.2: Demographic Distribution of Respondents**

**Analysis of Demographic Distribution on the Social Media Use, Critical Thinking Skills and Digital Reference Service Delivery of Librarians in Tertiary Institutions in Ekiti State, Nigeria.**

Statement		Frequency	Percentage
<b>Qualification</b>	B.Sc.	34	32.4
	M.Sc.	37	35.2
	Ph.D.	34	32.4
	<b>Total</b>	<b>105</b>	<b>100.0</b>
<b>Age Range</b>	20-29	3	2.9
	30-39	47	44.8
	40-49	18	17.1
	50-59	30	28.6
	60 and above	7	6.7
	<b>Total</b>	<b>105</b>	<b>100.0</b>
<b>Gender</b>	Male	47	44.8
	Female	58	55.2
	<b>Total</b>	<b>105</b>	<b>100.0</b>
<b>Years of Experience</b>	1-5	30	28.6
	6-10	33	31.4
	11-15	20	19.0
	16-20	9	8.6
	21-25	3	2.9
	26-30	3	2.9
	31 and above	7	6.7
<b>Total</b>	<b>105</b>	<b>100.0</b>	

**Source: Fieldwork Survey Result, 2024**

Table 4.2 shows the demography distribution of the study respondents. The table shows that the majority of the respondents, 50(47.6%), were from Ekiti State University Library, followed by Federal University Oye-Ekiti Library with 35(33.3%) respondents. 16(15.2%) were from Afe Babalola University College Libraries, 3 (2.9%) were from Venite University Iloro-Ekiti, and 1(1.0%) were from Bamidele Olomilua University of Education, Science and Technology Ikere-Ekiti. This shows that most of the respondents were from Ekiti State University Library. The demographic distribution of educational qualifications among the respondents reveals a

relatively balanced profile, with 34 (32.4%) holding a bachelor's degree, 37 (35.2%) holding a Master's degree, and 34 (32.4%) holding a Ph.D. of which majority of respondents holding Master's degree. This demonstrated a high level of an educated workforce, aligning with research emphasizing the importance of continuous learning in the library and information science field<sup>1</sup>.

In terms of age range, the age distribution of the respondents reveals a relatively young workforce, with 47 (44.8%) of respondents falling under the age of 30-39. Specifically, 30 (28.6%) fall within the age range of 50-59years, 18 (17.1%) fall within the age range of 40-49years, 7 (6.7%) fall under the age of 60years and above, while 3 (2.9%) are between 20-29years of age. This shows that the librarians in tertiary institutions in Ekiti State are vibrant, dynamic, and enthusiastic, with a significant proportion of librarians in their mid-career stage. The 30-40years 47 (44.8%) age range cohort is particularly notable, indicating stability and experience within the profession. However, the proportion of librarians aged between 40-50 years 18 (17.1%) is smaller, potentially signalling retirement or career transition. Furthermore, only 37 (34.3%) of respondents are above 50, highlighting the need for succession planning and knowledge transfer strategies. The research emphasises the importance of succession planning in the library and information science field, where tertiary institutions should prioritise training programmes catering to diverse age groups, mentorship initiatives that would bridge generational gaps, and strategic planning for knowledge transfer<sup>2</sup>.

Gender stratified, it appears that 58 female respondents dominated (55.2%) of the sample size. In comparison, 47 male respondents constituted (44.8%) of the total sample size, meaning that the slight majority of female respondents suggests that women are actively engaged in the library profession, aligning with global trends. This balance is crucial as diverse perspectives enhance the quality of service and innovation in libraries<sup>3</sup>. The demographic distribution also

includes the respondents' years of experience, which revealed a diverse range of experience levels, reflecting the dynamic nature of the profession. A significant proportion of 30 (28.6%) of librarians (below five years) indicated they were relatively new to the field. These fresh faces bring innovative ideas and enthusiasm and are eager to make a lasting impact. Their presence signals a bright future for librarianship. 33 (31.4%) librarians had 6-10 years of experience, forming the backbone of the profession. These mid-career professionals possess valuable expertise honed through years of service with an expert balance of tradition and innovation. 20 (19.0%) librarians had 11-15 years of experience, contributing depth and wisdom to the profession. Their extensive knowledge and critical thinking skills enable effective decision-making and mentorship on social media use for digital reference service delivery. 9 (8.6%) librarians had 16-20 years of experience and demonstrated remarkable dedication. These seasoned professionals lead by example, guiding colleagues and shaping the profession's future. The remaining 3 (2.9%), 3 (2.9%), and 7 (6.7%) librarians boasted 21-25 years, 26-30 years, and 31 years and above, respectively, embodying the profession's legacy. Their wealth of knowledge, critical thinking skills, and expertise ensure the continuity and progress of their profession.

### 4.3 Presentation of Research Questions

**Research Question One: What is the level of digital reference service delivery of librarians in tertiary institutions libraries in Ekiti State, Nigeria?**

**Table 4.3 Analysis of Research Questions One on Digital Reference Service Delivery of Librarians in Tertiary Institutions in Ekiti State**

Statement	SA	A	N	D	SD	Mean
<b>Synchronous</b>						
Real-time chat allows for timely and efficient answering of reference queries in my institution's library.	42 (40.0%)	40 (38.1%)	4 (38%)	10 (9.5%)	9 (8.6%)	3.91

Using real-time chat for digital reference services has improved user satisfaction in my institution's library.	38 (36.2%)	43 (41.0%)	2 (1.9%)	16 (15.2%)	6 (5.7%)	3.87
Real-time chat delivers digital reference services in my institution's library effectively.	39 (37.1%)	42 (40.0%)	3 (2.9%)	9 (8.6%)	12 (11.4%)	3.83
Real-time chat is easily accessible and user-friendly for patrons seeking digital reference services in my library.	34 (32.4%)	42 (40.0%)	5 (4.8%)	17 (16.2%)	7 (6.7%)	3.75
<b>Total</b>						<b>3.84</b>
Using phone support for digital reference service delivery has improved user satisfaction in my library.	35 (33.3%)	47 (44.8%)	3 (2.9%)	15 (14.3%)	5 (4.8%)	3.88
Phone support allows for timely and personalised responses to digital reference queries in my institution's library.	36 (34.3%)	43 (41.0%)	8 (7.6%)	9 (8.6%)	9 (8.6%)	3.84
Phone support is an effective channel for providing digital reference service delivery in my institution's library.	42 (40.0%)	32 (30.5%)	6 (5.7%)	19 (18.1%)	6 (5.7%)	3.81
Phone support is easily accessible and convenient for answering users' queries in my institution's library.	27 (25.7%)	50 (47.6%)	8 (7.6%)	17 (16.2%)	3 (2.9%)	3.77
<b>Total</b>						<b>3.83</b>
I used ChatGPT to provide accurate, reliable, and immediate responses to digital reference queries in my institution's library.	33 (31.4%)	48 (45.7%)	11 (10.5%)	11 (10.5%)	2 (1.9%)	3.94
My institution's library has sufficient technical support, internet capacity, and resources to integrate ChatGPT effectively into the delivery of digital reference services.	37 (35.2%)	42 (40.0%)	9 (8.6%)	8 (7.6%)	9 (8.6%)	3.86
ChatGPT is an effective tool for delivering digital reference services in my institution's library.	35 (33.3%)	45 (42.9%)	5 (4.8%)	10 (9.5%)	10 (9.5%)	3.81

ChatGPT has improved the efficiency of digital reference service delivery in my institution's library.	31 (29.5%)	49 (46.7%)	5 (4.8%)	12 (11.4%)	8 (7.6%)	3.79
<b>Total</b>						<b>3.85</b>
<b>Weighted Mean</b>						<b>3.83</b>
<b>Asynchronous</b>						<b>Mean</b>
Library patrons have attested to email as my institution's library's most preferred digital reference services delivery channel.	6 (43.8%)	33 (31.4%)	11 (10.5%)	15 (14.3%)	4 (3.8%)	3.92
Email is my institution's library's most preferred digital reference service delivery channel.	41 (39.0%)	36 (34.3%)	12 (11.4%)	8 (7.6%)	8 (7.6%)	3.90
Librarians respond to users' queries through the library email without any constraint.	34 (32.4%)	55 (52.4%)	12 (11.4%)	4 (3.8%)	7 (6.7%)	3.85
Email is used to deliver digital reference services in my institution's library.	36 (34.3%)	41 (39.0%)	6 (5.7%)	13 (12.4%)	9 (8.6%)	3.78
<b>Total</b>						<b>3.86</b>
Text messaging is a convenient way to deliver digital reference services outside regular library hours.	46 (43.8%)	44 (41.9%)	3 (2.9%)	10 (9.5%)	2 (1.9%)	4.16
I am comfortable using text messaging to communicate with users for digital reference service delivery.	38 (36.2%)	52 (49.5%)	6 (5.7%)	8 (7.6%)	1 (1.0%)	4.12
Text messaging is an effective tool for providing digital reference service delivery.	34 (32.4%)	53 (50.5%)	7 (6.7%)	7 (6.7%)	4 (3.8%)	4.01
Text messaging helps me to understand users' needs and preferences better.	34 (32.4%)	52 (49.5%)	6 (5.7%)	10 (9.5%)	3 (2.9%)	3.99
<b>Total</b>						<b>4.07</b>
I am comfortable using web-based chat to communicate with patrons for digital reference services.	44 (41.9%)	51 (48.6%)	5 (4.8%)	1 (1.0%)	4 (3.8%)	4.24

I find web-based chat an effective tool for providing digital reference services.	37 (35.2%)	54 (51.4%)	7 (6.7%)	2 (1.9%)	5 (4.8%)	4.10
I find web-based chat an efficient way to manage multiple digital reference queries simultaneously.	40 (38.1%)	52 (49.5%)	1 (1.0%)	4 (3.8%)	1 (1.0%)	4.07
Web-based chat enables me to provide detailed and comprehensive responses to digital reference queries.	28 (26.7%)	60 (57.1%)	5 (4.8%)	8 (7.6%)	4 (3.8%)	3.95
<b>Total</b>						<b>4.09</b>
<b>Weighted Mean</b>						<b>4.01</b>
<b>Grand Mean</b>						<b>3.92</b>

**Source: Fieldwork Survey Result, (2024)**

Decision rule 1.00-1.49= very low, 1.50-2.49= low, 2.50-3.49= neutral, 3.50-4.49= high, 4.50-5.00= very high

Note: SA= Strongly Agree, A= Agree, N= Neutral, D= Disagree, SD= Strongly Disagree

The evolution of information technology has revolutionized how librarians across tertiary institutions in Ekiti State communicate and deliver digital reference services to their clientele. Emerging synchronous and asynchronous modes are essential for this service's efficiency and effectiveness. The result analysis in Table 4.3.1 shows that there is high level of digital reference service delivery (weighted mean 4.01 and grand mean 3.92) by librarians in tertiary institution libraries in Ekiti State, Nigeria. They utilized synchronous and asynchronous modes of communication to rendered digital reference service delivery to a high level, as seen from the weighted mean, which is just above the decision rules (3.0). Services like web-based chat (4.09), text messages (4.07), (3.86) responding to users' reference queries through email (3.86), Chat GPT (3.85) are highly utilised as well as real-time chat (3.84) and phone call support (3.83).

These services facilitate immediate interaction, fostering more profound understanding and clarifying complex queries<sup>4</sup>. Synchronous promotes immediate engagement, reducing uncertainty and anxiety among the users<sup>5</sup>. In addition, asynchronous enables librarians to provide detailed responses, promoting reflective learning. The asynchronous mode of digital reference services delivery encourages tertiary institution librarians to reason/think beyond the library's four walls and explore various search engines to satisfy information-age users' needs.

**Research Question Two: What is the frequency of digital reference service delivery by librarians in tertiary institutions in Ekiti State, Nigeria?**

**Table 4.3.2. Analysis of Research Question Two on the frequency use of Digital Reference Service Delivery by librarians in Tertiary Institutions in Ekiti State**

Frequency of Use	N	O	M	W	D	Mean
How often do you respond to reference queries through the library's email?	1 (1.0%)	4 (3.8%)	22 (21.0%)	23 (21.9%)	55 (52.4%)	4.21
How often do you assist your clientele through web-based library chat?	7 (6.7%)	6 (5.7%)	29 (27.6%)	31 (29.5%)	32 (30.5%)	3.71
How often do you use phone call support for digital reference service delivery in your library?	7 (6.7%)	3 (2.9%)	34 (32.4%)	31 (29.5%)	30 (28.6%)	3.70
How often do you use text messages for digital reference services delivery in your institution's library?	7 (6.7%)	13 (12.4%)	14 (13.3%)	46 (43.8%)	25 (23.8%)	3.66
How often do you use ChatGP for digital reference service delivery in your institution's library?	10 (9.5%)	6 (5.7%)	25 (23.8%)	36 (34.3%)	28 (26.7%)	3.63
How often do you use real-time chat for digital reference service delivery in your institution's library?	15 (14.3%)	12 (11.4%)	31 (29.5%)	27 (25.7%)	20 (19.0%)	3.24
<b>Weighted Mean</b>						<b>3.69</b>
<b>Grand Mean</b>						<b>3.69</b>

Source: Fieldwork Survey Result, (2024)

Decision rule 1.00-1.49= very low, 1.50-2.49= low, 2.50-3.49= neutral, 3.50-4.49= high, 4.50-5.00= very high

Table 4.3.2 presents the data on the frequency of use of the synchronous and asynchronous tools for digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. The analysis revealed that the majority (4.21) of respondents most often respond to users' reference queries through the library's email, followed by (3.71) respondents that assist their clientele through web-based library chat, (3.70) respondents used phone call support for digital reference service delivery in their institution's library. In contrast, others utilised text messages (3.66), ChatGPT, and real-time chat for digital reference service delivery in their institution's library. However, the result analysis revealed that ChatGPT, text message, and real-time chat are below the weighted mean and the grand mean (3.69), which indicates that librarians in tertiary institutions in Ekiti State are not conversant with the use of these three (3) tools for digital reference service delivery in their institution's libraries.

**Research Question Three: What is the level of social media use by librarians in tertiary institutions in Ekiti State, Nigeria?**

**Table 4.3.3 Analysis of Research Question Three on Social Media Use of Librarians in the Provision of Digital Reference Service Delivery in Tertiary Institutions in Ekiti State**

Social Media Platforms	VH	H	M	L	V L	Mean
Library social networking sites (Facebook, TikTok, WhatsApp, Telegram)	84 (80.0%)	7 (6.7%)	6 (5.7%)	3 (2.9%)	5 (4.8%)	4.54
Scheduling and meeting tools such as Doodle, Google Meet, Zoom,	43 (41.0%)	14 (13.3%)	30 (28.6%)	10 (9.5%)	8 (7.6%)	3.70
Chatting tools include Facebook Messenger, WeChat, Wha, and Google Talk. MSN,	16 (15.2%)	36 (34.3%)	21 (20.0%)	18 (17.1%)	14 (13.3%)	3.21

Blogging such as WordPress, Blogger	21 (20.0%)	27 (25.7)	23 (21.9%)	2 (1.9%)	32 (30.5%)	3.03
Collaborative tools such as Google Docs, Wiki, Mendeley, Dropbox	9 (8.6%)	38 (36.2%)	10 (9.5%)	4 (3.85%)	44 (41.9%)	2.66
Microblogging, such as Twitter	16 (15.2%)	4 (3.8%)	7 (6.7%)	77 (73.3%)	1 (1.0%)	2.59
Conferencing tools such as Skype, Viber, Line, Imo, Google Duo	1 (1.0%)	38 (36.2%)	9 (8.6%)	18 (17.1%)	39 (37.1%)	2.47
Social tagging bookmarking such as Delicious, Cite, ULike, RSS	5 (4.8%)	9 (8.6%)	15 (14.3%)	42 (40.0%)	34 (32.4%)	2.13
Podcasts and Vodcast	2 (1.9%)	4 (3.8%)	13 (12.4%)	44 (41.9%)	42 (40.0%)	1.86
Image and video sharing such as YouTube, SlideShare, Flickr, Printest, Instagram, TikTok	1 (1.0%)	3 (2.9%)	10 (9.5%)	40 (38.15)	51 (48.6%)	1.70
<b>Weighted Mean</b>						<b>2.79</b>
<b>Grand Mean</b>						<b>2.79</b>

**Source: Fieldwork Survey Result, (2024)**

Decision rule 1.00-1.49= very low, 1.50-2.49= low, 2.50-3.49= moderate, 3.50-4.49= high, 4.50-5.00= very high.

Note: VH= Very High, H=High, M= Moderate, L= Low, VL= Very Low

Table 4.3.3 analyses the librarians' level of social media use for digital reference service delivery in tertiary institutions in Ekiti State. The result revealed the librarians' perspective on using social media platforms with the mean and the grand mean of 2.79. The result indicates that most (4.54) of librarians in tertiary institutions priorities convenience, accessibility, and familiarity when using library social networking sites like Facebook, WhatsApp, and Telegram, followed by Scheduling and meeting tools such as Doodle, Google Meet, and Zoom with a mean (3.70), Chatting tools include Facebook Messenger, WeChat, WhatsApp, and Google

Talk and MSN with a mean (3.21), Blogging such as WordPress, Blogger (3.03). The previous study found that over 50% of librarians were active on Facebook, WhatsApp, Twitter, and Facebook Messenger<sup>23, 24</sup>. On the other hand, the result shows some other tools that below weighted mean (2.79) which has not been frequently utilized by librarians in tertiary institutions, Ekiti State, Nigeria. Tools like collaborative tools such as Google Docs, Wiki, Mendeley, Dropbox (2.66), Microblogging, such as Twitter (2.59), Conferencing tools such as Skype, Viber, Line, Imo, Google Duo (2.47), Social tagging bookmarking such as Delicious, Cite, ULike, RSS (2.13), Podcasts and Vodcast (1.86) and Image and video sharing such as YouTube, SlideShare, Flickr, Printest, Instagram, and TikTok (1.70).

**Research Question Four: How often do you use social media in your institution’s library?**

**Table 4.3.4 Analysis of Research Question Four on the Frequency of Social Media Use of Librarians in the Provision of Digital Reference Service Delivery in Tertiary Institutions in Ekiti State.**

Statements	D	W	M	O	N	Means
My institution's library uses social media to provide unhindered services to patrons.	54 (51.4%)	35 (33.3%)	2 (1.9%)	6 (5.7%)	8 (7.6%)	4.15
My institution’s library uses social media to search and retrieve information.	50 (47.6%)	36 (34.3%)	5 (4.8%)	2 (1.9%)	12 (11.4%)	4.10
My institution's library uses social media to respond to users’ queries.	49 (46.7%)	33 (31.4%)	9 (8.6%)	7 (6.7%)	7 (6.7%)	4.05
My institution’s library uses social media to provide research assistance and guidance for clientele.	43 (41.0%)	37 (35.2%)	16 (15.2%)	2 (1.9%)	7 (6.7%)	4.02
My institution's library uses social media to promote the vision and mission of the University.	40 (38.1%)	42 (40.0%)	13 (12.4%)	3 (2.9%)	7 (6.7%)	4.00

My institution's library uses social media as a collaborative platform with other institutions' libraries.	37 (35.2%)	38 (36.2%)	20 (19.0%)	1 (1.0%)	9 (8.6%)	3.89
My institution's library uses social media platforms to connect and interact with clientele.	41 (39.0%)	28 (26.7%)	16 (15.2%)	7 (6.7%)	13 (12.4%)	3.73
<b>Weighted Mean</b>						<b>3.98</b>
<b>Grand Mean</b>						<b>3.98</b>

**Source: Fieldwork Survey Result, (2024)**

Decision rule 1.00-1.49= never, 1.50-2.49= occasionally, 2.50-3.49= seldom, 3.50-4.49= often, 4.50-5.00= very often

Note: D= Daily, W= Weekly, M= Monthly, O= Occasionally, NU= Never Use

Table 4.3.4 presents the data on the frequency of social media use for digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. The analysis revealed that most respondents, with a mean (of 4.15), utilise social media to provide unhindered services to library patrons, followed by a mean (4.10) of librarians who use social media to search and retrieve information. Also, a mean score (of 4.05) showing respondents high frequency of social media use to respond to users' queries, (4.02) use social media to provide research assistance and guidance for clientele in their various institutions, and 4.00. However, the result analysis of mean (3.89) respondents and (3.73) revealed that using social media as a collaborative platform with other institutions' libraries and to connect and interact with clientele are below the weighted mean and the grand mean (3.98). Since the weighted mean of (3.98) is greater than the criterion mean of 3.50 set as threshold for regular use, it can be deduced from the study that librarians in tertiary institutions in Ekiti State are conversant with the use of social media platforms for rendering digital reference service delivery to their clientele in their respective institution's libraries.

**Table 4.3.5 Analysis of Research Question Four on the Purpose of Social Media Use of Librarians in the Provision of Digital Reference Service Delivery in Tertiary Institutions in Ekiti State**

<b>Statement</b>	<b>SA</b>	<b>A</b>	<b>N</b>	<b>D</b>	<b>SD</b>	<b>Mean</b>
To connect with more comprehensive community users	57 (54.3%)	39 (37.1%)	2 (1.9%)	3 (2.9%)	4 (3.8%)	4.35
To provide research assistance and consultation for the clientele	53 (50.5%)	44 (41.9%)	2 (1.9%)	2 (1.9%)	4 (3.8%)	4.33
To render reference services delivery to their clientele.	48 (45.7%)	49 (46.7%)	1 (1.0%)	4 (3.8%)	3 (2.9%)	4.29
To provide real-time digital reference service delivery	53 (50.5%)	38 (36.2%)	8 (7.6%)	2 (1.9%)	4 (3.8%)	4.28
Chatting with friends and meeting new people	44 (41.9%)	53 (50.5%)	3 (2.9%)	1 (1.0%)	4 (3.8%)	4.26
To make provisions for the library on the wheel.	48 (45.7%)	44 (41.9%)	6 (5.7%)	2 (1.9%)	5 (4.8%)	4.22
To provide users with instruction and a library tour.	51 (48.6%)	42 (40.0%)	2 (1.9%)	3 (2.9%)	7 (6.7%)	4.21
Relaxation and entertainment	45 (42.8%)	51 (48.6%)	4 (3.8%)	3 (2.9%)	2 (1.9%)	4.19
To search for information	34 (32.4%)	54 (51.4%)	8 (7.6%)	4 (3.8%)	4 (3.8%)	4.19
To send a copy of a document	50 (47.6%)	38 (36.2%)	8 (7.6%)	5 (4.8%)	4 (3.8%)	4.19
To provide outreach programs	47 (44.7%)	42 (40.0%)	6 (5.7%)	6 (5.7%)	4 (3.8%)	4.16
Display library activities	40 (38.1%)	50 (47.6%)	10 (9.5%)	1 (1.0%)	4 (3.8%)	4.15
Collaborates with colleagues to solve users' complex queries.	36 (34.3%)	59 (56.2%)	1 (1.0%)	1 (1.0%)	8 (7.6%)	4.13
Interlibrary loan	50 (47.6%)	38 (36.2%)	5 (4.8%)	5 (4.8%)	4 (3.8%)	4.12
Collaborative Network-based service	39 (37.1%)	46 (43.8%)	13 (12.4%)	3 (2.9%)	4 (3.8%)	4.08
Current Awareness Service	38 (36.2%)	49 (46.7%)	9 (8.6%)	4 (3.8%)	5 (4.8%)	4.06

Online indexing and abstracting services	36 (34.3%)	48 (45.7%)	15 (14.8%)	2 (1.9%)	4 (3.8%)	4.05
I like watching short movies and reels, viewing pictures, etc.	32 (30.5%)	51 (48.6%)	11 (10.5%)	3 (2.9%)	8 (7.6%)	3.91
Playing games and sport	39 (37.1%)	43 (41.0%)	7 (6.7%)	5 (4.8%)	11 (10.5%)	3.90
<b>Weighted Mean</b>						<b>4.13</b>
<b>Grand Mean</b>						<b>4.13</b>

**Source: Fieldwork Survey Result, (2024)**

Decision rule 1.00-1.49= very low, 1.50-2.49= low, 2.50-3.49= moderate, 3.50-4.49= high, 4.50-5.00= very high.

Note: SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Table 4.3.5 presents the data on the purpose of social media use for digital reference services. The data analysis results shows high level purpose (weighted mean, 4.13) of social media use, and revealed that the majority of the respondents with mean (4.35) were purposely using social media to connect with more comprehensive community users, followed by mean (4.33) respondents using social media to provide research assistance and consultation for the clientele, 4.29 respondents utilize the social media to render reference services delivery to their clientele, 4.28 respondents also using social media to provide real-time digital reference service delivery, 4.26 respondents using social media to chat with friends and meeting new people, 4.24 respondents were provided users with instruction and a library tour, 4.22 respondents were make provisions for the library on the wheel for their clientele, 4.21 respondents were provide electronic document delivery services for their clientele through social media, while 4.19 respondents were using social media to send a copy of a document, to search for information and also for relaxation and entertainment respectfully, 4.16 respondents were using social media to provide outreach programs, 4.15 respondents make use social media to display library activities and 4.13 were using social media platforms to collaborates with colleagues to solve

users' complex queries. Others like 4.12 respondents fall below the weighted mean (4.13) but more significant than grand means (4.06) with the provision of rendering interlibrary loan, Collaborative Network-based service with mean (4.08), Current Awareness Service (4.06), Online indexing and abstracting services (4.05), 3.91 respondents like to watch short movies and reels, viewing pictures, etc. on social media and while 3.90 respondents using social media to playing games and sport.

**Research Question Five: What is the level of critical thinking skills of librarians in tertiary institutions in Ekiti State, Nigeria?**

**Table 4.3.6 Analysis of Research Question Five on Critical Thinking Skills of Librarians in the Provision of Digital Reference Service Delivery in Tertiary Institutions in Ekiti State**

Statement	SA	A	N	D	SD	Mean
<b>Recognition of Assumption</b>						
I actively gather information from diverse sources to stay at the forefront of emerging technologies.	61 (58.1%)	38 (36.2%)	2 (1.9%)	2 (1.9%)	2 (1.9%)	4.47
Recognition of assumptions in user queries provides accurate delivery of digital reference services.	54 (51.4%)	43 (41.0%)	3 (2.9%)	3 (2.9%)	2 (1.9%)	4.37
I gather information from different points of view.	45 (42.9%)	51 (48.6%)	6 (5.7%)	1 (1.0%)	2 (1.9%)	4.30
Recognition of assumption provides culturally sensitive digital reference services delivery.	48 (45.7%)	41 (39.0%)	13 (12.4%)	1 (1.0%)	2 (1.9%)	4.26
Recognising assumptions makes it essential for librarians to identify biases in users' queries.	41 (39.0%)	54 (51.4%)	6 (5.7%)	2 (1.9%)	2 (1.9%)	4.24
Recognition of assumption provides evidence-based digital reference services.	49 (46.7%)	38 (36.2%)	11 (10.0%)	5 (4.8%)	2 (1.9%)	4.21

Recognition of assumption makes it easy to clarify unclear digital reference queries.	38 (36.2%)	57 (54.3%)	6 (5.7%)	2 (1.9%)	2 (1.9%)	4.21
I find it easy to question the assumptions of users' queries.	41 (39.0%)	54 (51.4%)	1 (1.0%)	6 (5.7%)	3 (2.9%)	4.18
Recognition of assumption allows librarians to identify gaps in digital reference queries.	44 (41.9%)	45 (42.9%)	9 (8.6%)	2 (1.9%)	5 (4.8%)	4.15
Recognition of assumption provides personalised assistance in digital reference service delivery.	43 (41.0%)	45 (42.9%)	10 (9.5%)	4 (3.8%)	3 (2.9%)	4.15
I carefully examine assumptions from various perspectives.	32 (30.5%)	65 (61.9%)	2 (1.9%)	3 (2.9%)	3 (2.9%)	4.14
Librarians are proficient in recognising the relevant sources to address users' reference queries.	33 (31.4%)	58 (55.2%)	11 (10.5%)	1 (1.0%)	2 (1.9%)	4.13
<b>Weighted Mean</b>						<b>4.23</b>

#### Evaluation of Assumption

I can provide evidence-based digital reference services to community users.	47 (44.8%)	47 (44.8%)	7 (6.7%)	2 (1.9%)	2 (1.9%)	4.38
I can provide relevant responses to users' reference queries.	52 (49.5%)	43 (41.0%)	5 (4.8%)	2 (1.9%)	3 (2.9%)	4.33
I can help improve the accuracy and credibility of user responses.	39 (37.1%)	50 (47.6%)	11 (10.0%)	2 (1.9%)	3 (2.9%)	4.32
I can determine the relevance of information sources in answering users' queries.	43 (41.0%)	49 (46.7%)	11 (10.0%)	0 (0.0%)	2 (1.9%)	4.29
I can identify biases in users' queries.	50 (47.6%)	35 (33.3%)	12 (11.4%)	5 (4.8%)	3 (2.9%)	4.28
I can identify gaps through different sources.	52 (49.5%)	40 (38.1%)	8 (7.6%)	1 (1.0%)	2 (1.9%)	4.25
I can provide culturally sensitive digital reference services delivery.	41 (39.0%)	42 (40.0%)	14 (13.3%)	5 (4.8%)	3 (2.9%)	4.20

I can provide the credibility of sources and consider multiple viewpoints in answering users' queries.	51 (48.6%)	45 (42.9%)	4 (3.8%)	3 (2.9%)	2 (1.9%)	4.20
I can provide credibility to online sources for effective digital reference service delivery.	48 (45.7%)	39 (37.1%)	12 (11.4%)	3 (2.9%)	3 (2.9%)	4.18
I can facilitate the analysis and interpretation of complex user queries.	54 (51.4%)	42 (40.0%)	6 (5.7%)	1 (1.0%)	2 (1.9%)	4.14
I can analyse complex user queries.	45 (42.9%)	52 (49.5%)	3 (2.9%)	2 (1.9%)	3 (2.9%)	4.08
<b>Weighted Mean</b>						<b>4.24</b>
<b>Draw Conclusion</b>						
I can conclude by providing accurate, reliable, and effective digital reference services to a community of users.	51 (48.6%)	40 (38.1%)	8 (7.6%)	4 (3.8%)	2 (1.9%)	4.28
I can draw conclusions based on multiple sources when providing digital reference services.	42 (40.0%)	56 (53.3%)	3 (2.9%)	2 (1.9%)	2 (1.9%)	4.28
I can conclude and deliver logical and compelling answers to users' queries.	46 (43.8%)	44 (41.9%)	1 (0.9%)	3 (2.4%)	1 (0.9%)	4.26
Conclude allows librarians to identify digital reference services delivery patterns that will improve their experiences.	36 (34.3%)	53 (50.5%)	5 (4.8%)	9 (8.6%)	2 (1.9%)	4.07
<b>Weighted Mean</b>						<b>4.22</b>
<b>Grand Mean</b>						<b>4.23</b>

Source: Fieldwork Survey Result, (2024)

Decision rule 1.00-1.49= very low, 1.50-2.49= low, 2.50-3.49= moderate, 3.50-4.49= high, 4.50-5.00= very high.

Note: SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

The critical thinking skills of librarians in providing digital reference service delivery are presented in Table 4.3.6. The table analyses the level of critical thinking skills of librarians in tertiary institutions in Ekiti State. In this study, critical thinking skills were measured by recognition of assumption, evaluation of assumption, and drawing conclusions. The grand mean of (4.02) reveals that most respondents have acquired high critical thinking skills. From the analysis, it can be seen that the mean (4.47) respondents have more profound knowledge of how to actively gather information from diverse sources to stay at the forefront of emerging technologies, with the mean of (4.37) responses to recognition of assumptions in user queries provides accurate digital reference services delivery, the respondents responded to gather information from different points of view with the mean (4.30), the respondents also offer their insights on the recognition of assumption to provides culturally sensitive digital reference services delivery with the mean (4.26), the recognising assumptions makes it essential for librarians to identify biases in users' queries (4.24),

In addition, respondents with a mean (4.23) responded to the recognition of assumption, making it easy to clarify unclear digital reference queries, and recognition of assumption provides evidence-based digital reference services, respectively. (4.21), respondents with (4.18) find it easy to question the assumptions of users' queries, while respondents with mean (4.15) support recognition of assumption allows librarians to identify gaps in digital reference queries, and recognition of assumption provides personalised assistance in digital reference service delivery respectfully, respondent with mean (4.14) carefully examine assumptions from various perspectives, librarians are proficient in recognizing the relevant sources to address users' reference queries (4.13) are below the weighted mean but greater than the criterion mean of 3.50 set as threshold for critical thinking skill, which indicates that librarians in tertiary

institutions possessed a high level of critical thinking skills when it comes to recognition of assumption.

Further, the respondent also has a high level of critical thinking skills in evaluating the relevant source of information to solve user reference queries. The weighted mean score for evaluation was recorded with (4.24) based on the respondents' analysis under the assumption assessment. The (4.38) respondents believe that evaluation of assumption provides evidence-based digital reference services to community users, followed by (4.33) respondents who can provide relevant responses to users' reference queries, some respondents (4.32) feel that they can help improve the accuracy and credibility of user responses, the result also shows that (4.29) respondents can determine the relevance of information sources in answering users' queries, and 4.28 respondents can identify biases in users' queries.

Though, 4.20 respondents can provide the credibility of sources and consider multiple viewpoints in answering users' queries, I can provide culturally sensitive digital reference services delivery (4.20), I can give credibility to online sources for effective digital reference service delivery (4.18), I can facilitate the analysis and interpretation of complex user queries (4.14), I can analyse complex user queries (4.08) are below the weighted mean (4.24) but greater than the criterion means of 3.50 set as threshold for the ability of librarians to evaluate the online information source.

The sub-construct draws a conclusion, which measures the ability of respondents to make informed decisions (draw a conclusion) on the assumption that it provides users with relevant information that will meet their needs and offers practical and effective digital reference service delivery. The analysis of respondents' (4.28) responses reveals that making sound judgments on the assumption was accurate, reliable, and effectively provide digital reference services to a community of users and draw conclusions based on multiple sources when

providing digital reference services (4.28). However, draw conclusions and deliver logical and compelling answers to users' queries (4.26) and drawing conclusions allows librarians to identify digital reference service delivery patterns that will improve their experiences (4.07) are below the weighted mean (4.22) but greater than 3.50 set as threshold for librarian ability to make informed decision.

Overall, the weighted means of the recognition of assumption (4.23), evaluation of assumption (4.24), drawing a conclusion (4.22), and grand mean 4.23 are greater than criterion mean of (3.50) set as threshold for critical thinking skill of librarians. This indicates that librarians in tertiary institutions in Ekiti possessed high level of critical thinking skills when it comes to digital reference service delivery. This result is related to a previous study that focused on the importance of critical thinking skills in digital reference service delivery.

### 4.3 Presentation of Hypotheses

The following null hypotheses were tested at a 0.05 level

**H01: There is no significant influence of social media use on the delivery of digital reference services by librarians in tertiary institutions in Ekiti State.**

**Table 4.7: Summary of the result of the influence of social media use on digital reference services delivery of librarians in tertiary institutions in Ekiti State, Nigeria.**

<b>Model Summary</b>				
<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.397 <sup>a</sup>	.158	.149	.38576

<b>ANOVA<sup>a</sup></b>						
<b>Model</b>		<b>Sum of squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	2.866	1	2.866	19.259	.000 <sup>b</sup>
	Residual	15.328	103	.149		
	Total	18.194	104			

a. Dependent Variable: Digital Reference Service Delivery

b. Predictors: (Constant), Social Media Use

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.288	.148		22.197	.000
	Social Media Use	.158	.036	.397	4.389	.000

a. Dependent Variable: Digital Reference Service Delivery

Source: Fieldwork Survey Result, (2024).

Table 4.7a-c presents the regression analysis results on the influence of social media use on digital reference service delivery of librarians in tertiary institutions in Ekiti State. The results in Table 4.7a reveal a significant and positive relationship between social media use and digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria ( $R=0.397$ ,  $P<0.05$ ). The coefficient of determination (Adj.  $R^2$ ) of 0.149 indicates that social media use accounts for 14.9% of the changes in digital reference service delivery, providing valuable insights for the field. Other variables not investigated in this study explain the remaining 85.1% variation in digital reference service delivery.

Table 4.7b presents the results of the ANOVA of the regression test, which reveal that social media use significantly influences the digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. This is explained by the F-value (19.259) and low p-value (0.000), which is statistically significant at a 95% confidence interval. Hence, the result proved that social media use significantly influenced the librarians' digital reference service delivery in tertiary institutions in Ekiti State.

Additionally, the results of the regression coefficients in Table 4.7c revealed that, at a 95% confidence level, a unit change in social media use will lead to a 0.158 increase in the level of digital reference service delivery of librarians in tertiary institutions in Ekiti State, given that all the other factors are held constant. On the strength of this result (Adj.  $R^2 =$

0.149,  $F(1,104)=19.259$ ,  $p=000$ ), this study rejects the null hypothesis one ( $H_01$ ), which States that there was no significant influence of social media use on digital reference service delivery of librarians in tertiary institutions in Ekiti State.

**Ho2: There is no significant influence of critical thinking skills on digital reference service delivery of librarians in tertiary institutions in Ekiti State.**

**Table 4.8: Summary of the result of the influence of social media use on digital reference services delivery of librarians in tertiary institutions in Ekiti State, Nigeria.**

<b>Model Summary</b>						
<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>		
1	.288 <sup>a</sup>	.083	.074	.40242		
a. Predictors: (Constant), Critical Thinking of Librarians						
<b>ANOVA<sup>a</sup></b>						
<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	1.514	1	1.514	9.349	.003 <sup>b</sup>
	Residual	16.680	103	.162		
	Total	18.194	104			
a. Dependent Variable: Digital Reference Service						
b. Predictors: (Constant), Critical Thinking Skills						
<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>		
1	(Constant)	3.158	.251		12.567	.000
	Critical Thinking Skills	.180	.059	.288	3.058	.003
Dependent Variable: Digital Reference Service delivery						

Table 4.8a-c presents the regression analysis results on the influence of critical thinking skills on digital reference service delivery of librarians in tertiary institutions in Ekiti State. The results in Table 4.8a show that critical thinking skill has a positive and significant influence with digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria ( $R=0.285$ ,  $P<0.05$ ). The coefficient of determination (Adj.  $R^2$ ) of 0.074 indicates that critical

thinking skills account for 7.4% of the changes in digital reference service delivery, highlighting the importance of this factor. The remaining 92.6% variation in digital reference service delivery is explained by other variables not investigated in this study.

Table 4.8b presents the results of the ANOVA of the regression test, which reveal that critical thinking skill significantly influences the digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria. This is explained by the F-value (9.349) and low p-value (0.001), which is statistically significant at a 95% confidence interval. Hence, the result proved that the critical thinking skills of librarians significantly influenced the digital reference service delivery in tertiary institutions in Ekiti State.

Additionally, the results of the regression coefficients in Table 4.8c revealed that, at a 95% confidence level, a unit change in the level of critical thinking skill would lead to a 0.180 increase in the level of digital reference service delivery of librarians in tertiary institutions in Ekiti State, given that all the other factors are held constant. On the strength of this result (Adj.  $R^2 = 0.074$ ,  $F(1,104)=9.349$ ,  $p=000$ ), this study rejects the null hypothesis two ( $H_02$ ), therefore, social media use have positive significant on digital reference service delivery of librarians in tertiary institutions in Ekiti State.

**H03 There is no combined influence of social media use and critical thinking skills on digital reference service delivery of librarians in tertiary institutions in Ekiti State.**

**Table 4.9: Summary of the result of the multiple regression analysis that examines the influence of social media use and critical thinking skills of librarians on digital reference service delivery in tertiary institutions in Ekiti State.**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.463 <sup>a</sup>	.214	.199	.37432

a. Predictors: (Constant), Critical Thinking Skills, Social Media Use

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

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.902	2	1.951	13.924	.000 <sup>b</sup>
	Residual	14.292	102	.140		
	Total	18.194	104			

a. Dependent Variable: Digital Reference Service Delivery  
Predictors: (Constant), Critical Thinking, Social Media Use

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

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.705	.258		10.474	.000
	Social Media Use	.145	.035	.365	4.128	.000
	CriticalThinking Skills	.150	.055	.241	2.719	.008

a. Dependent Variable: Digital Reference Service Delivery

**Source: Fieldwork Survey Result, 2024**

The table above shows the analysis of the results of the selected tertiary institutions. The result yielded a multiple regression coefficient of  $R = 0.463$  and a multiple R-square of 0.214. The result also revealed that adjusted  $R^2 = 0.199$ . Table 4.9a-c presents the results of the multiple regression for the combined influence of social media use and critical thinking skills of librarians in tertiary institutions in Ekiti State, Nigeria. The correlation coefficient (R) measures the strength and direction of linear regression between the predictors (critical thinking skills and social media use) and digital reference service delivery. This ( $R = 0.463$ ,  $P < 0.5$ ) indicates a moderate positive correlation, meaning that as critical thinking skills and social media use increase, the level of digital reference services also tends to increase. The coefficient of determination ( $R^2$ ) of 0.214 measures the proportion of the variance in digital reference service delivery explained by the predictors (critical thinking skills and social media use). This suggested that approximately 21.4% of the variance in digital reference service delivery can be attributed to librarians' critical thinking skills and social media use in tertiary institutions in Ekiti State, Nigeria. The remaining 78.6% variation in digital reference service

delivery of librarians in tertiary institutions in Ekiti State, Nigeria, is influenced by other factors not investigated in the study.

Table 4.9b presents the result of ANOVA of the regression test, which shows that critical thinking skills and social media use have significantly influenced the level of digital reference delivery of librarians in tertiary institutions in Ekiti State, Nigeria. This can be explained by the F-value (13.924) and low P-value (0.000), which are statistically significant at a 95% confidence interval. Hence, the result postulated that critical thinking skills and social media use significantly influenced librarians' digital reference service delivery in tertiary institutions in Ekiti State, Nigeria.

Furthermore, the regression coefficient in Table 4.9c shows that librarians' social media use and critical thinking skills significantly impact digital reference service delivery. Specifically, the analysis revealed that at a 95% coefficient level, librarians' social media use would lead to a 0.145 increase in digital reference service delivery in tertiary institutions in Ekiti State, Nigeria.

Given that all the other factors are held constant. Also, at a 95% confidence level, a unity change in the level of critical thinking skills will lead to a 0.150 increase in digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria, given that all other factors are held constant. Furthermore, the independent variables examined the level of critical thinking skills as having a robust positive effect on digital reference service delivery compared to social media use. That means there is a perceived significant combined influence of only critical thinking skills on digital reference service delivery of librarians in tertiary institutions in Ekiti State. The social media use of librarians has no significant joint contribution to the effectiveness of digital reference service delivery of librarians in tertiary institutions in Ekiti State. It is on the strength of this result ( $Adj.R^2 = 0.199$ ,  $F(2, 102) = 13.924$ ,  $p = 0.000$ ) that the null hypothesis three ( $H_03$ ), which states that there was no significant combined influence of

social media use and critical thinking skills on the digital reference service delivery of librarians in tertiary institutions in Ekiti State, Nigeria, is therefore rejected. The study's result aligns with previous related studies indicating that social media use and critical thinking skills jointly predict digital reference services delivery effectively ( $\beta=0.365$ ,  $t=4.128$ ,  $p<0.001$ ). This finding supports the notion that social media uses are essential for librarians to provide effective digital reference service delivery<sup>6</sup>.

#### 4.5 Thematic Analysis of the interview conducted with Heads of Tertiary Institution Libraries

**Table 4.10 Analysis of the interview conducted with Heads of Tertiary Institution Libraries**

S/N	Tertiary Institution	Digital Reference Service Delivery	Mode of Digital Reference Service Delivery	Social Media Use	Critical Thinking Skills
1.	Bamidele Olomilua University of Education, Science, and Technolog, Ikere-Ekiti	Available to a limited extent	Synchronous and asynchronous	High	High
2.	Ekiti State University, Ado-Ekiti	Available to a limited extent	Synchronous and asynchronous	low	High
3.	Afe Babalola University, Ado-Ekiti	Available and moderate	Synchronous and asynchronous	high	High
4.	Federal University, Oye-Ekiti	Available and moderate	Synchronous and asynchronous	low	High
5.	Venite University, Iloro-Ekiti	Available and moderate	Synchronous and asynchronous	low	Moderate

**Source: Fieldwork Survey Result, 2024.**

The thematic analysis report presents the findings from structured interviews that complemented the questionnaire administered to librarians in six (6) tertiary institutions in

Ekiti State, Nigeria. The structured interview was conducted with five (5) heads of tertiary institution librarians out of six (6) heads of tertiary institution librarians due to time constraints. These thematic analyses address the complex questions about the dynamic and influence of social media use and critical thinking skills on digital reference service delivery, which have not been adequately addressed. The interview questions were based on the level of digital reference service delivery, frequency of digital reference service delivery, frequency and purpose of social media use, and the level of critical thinking skills of librarians in tertiary institutions in Ekiti State.

The advent of technology shows the dynamics of using physical library resources. The findings show the four-wall library has, to some extent, been replaced by the library on the wheel or in the pocket. The library in the pocket has been conveniently provided to the users through digital reference service delivery. The digitalization of tertiary institutions' libraries was born to provide a convenient online solution to digital users' queries and to bring the library to your fingertips. Therefore, the interviewees' perspective on understanding digital reference service delivery has been summarized as a service that brings the library to users wherever they are (UL, FUOYE). This apt definition aligns with the BOUESTI UL, as an online service provided by librarians or experts to assist users in finding relevant materials that suit their needs, irrespective of location. In the view of ABUAD UL, digital reference service delivery is an online service that uses social media platforms and digital gadgets to provide, with the help of librarians' expert guidance, guiding users on how to easily access and evaluate the relevant materials that will answer users' queries, and personalised support at any point in time, anywhere in their comfort zone.

The ULs' submission above aligns with the previous study on the significance of digital reference service delivery. The literature sees digital reference service delivery as a system of

transitioning from youth to maturity. This online computer-mediated service transaction medium protects the security of marginalised groups who may find it difficult to access physical libraries<sup>7</sup>. The findings show that librarians in tertiary institutions in Ekiti rendered digital reference services delivery through synchronous and asynchronous modes of digital reference services delivery. However, the synchronous is not fully utilized in some of the tertiary institutions in Ekiti State. The findings identify some susceptible factors, such as lack of ICT compliance by the librarians, inadequate technology infrastructure, technical issues, epileptic power supply, and unstable internet connectivity. Comparatively, it was found that some of the developed countries like India, the United States of America, and Canada, among others, have embraced full digital reference services delivery to meet the evolving needs of their clientele<sup>71</sup>.

The frequency of use of digital reference service delivery by librarians in tertiary institutions in Ekiti State was reported that their libraries render digital reference service delivery appropriately based on the user's queries. The interviewed librarians also indicated that the frequency of digital reference service delivery is closely tied to the volume and how often the users' queries are received (UL, BOUSETI, EKSU, and ABUAD). This finding is supported by the research that stated the significance understanding of users' query patterns in determining digital reference service delivery. The previous study reveals that the number of user queries received by librarians directly influences the frequency of digital reference service delivery<sup>8</sup>. Similarly, another study found that libraries experiencing high query volumes require more frequent digital reference service delivery<sup>9</sup>.

In addition, digital reference service delivery is more than just an online service. Instead, it is a bridge that connects users to knowledge, regardless of time or location. This innovative

approach uses social media and other digital platforms, allowing librarians to think critically about the effectiveness of digital reference service delivery.

Therefore, social media use, from the perspective of the librarians interviewed, sees social media as an indispensable tool in their digital reference service delivery; the interviewees disclosed that social media use enhances their ability to provide effective digital reference service delivery. As interviewed librarians noted, “Social media use allows librarians to quickly respond to user queries with timely support” and “provide effective and efficient in disseminating information” (UL, BOUESTI, FUOYE, EKSU, and ABUAD). The questioner was also asked to rate their level of social media use; the results revealed a varying degree of engagement. Most respondents reported above-average use, indicating high comfort and familiarity with social media platforms on digital reference service delivery. Another respondent described their social media use as average, balancing social media use and other professional responsibilities. Meanwhile, others reported moderate use, primarily for promotional and personal purposes or responding to users' queries.

Moreover, the librarians interviewed in tertiary institutions also identified Facebook, Twitter, WhatsApp, Messenger, and Telegram as primary digital reference service delivery tools. The findings also show the purpose and benefits of social media use for digital reference service delivery and a medium to reach more comprehensive community users, increase community engagement and outreach, bring libraries into users' pockets, enhance real-time chat, and render research assistance to the clientele when the needs arise.

The responses of the tertiary institution librarians on critical thinking skills indicated that critical thinking is the ability to be innovative and be creative” (UL, ABUAD). “..... concerns our abilities to think analytically and creatively, resolve problems, and arrive at logical and valid conclusions” (UL, BOUESTI). “.....librarians have average abilities for this

skill” (UL, BOUESTI). In addition, the responses of the tertiary institution librarians on evaluation of the credibility of online sources for digital reference reported that several methods need to be employed when evaluating the credibility of sources, such as authority, accuracy, purpose, currency, the reputation of the author and publishers and expertise, recency, objectivity, relevance, and reliability.

#### **4.6 Discussion of Findings**

The analysis data in this chapter align with the research questions and hypotheses, leading to new findings. The findings are discussed using qualitative methods, including a structured interview with the institutional heads of tertiary institution libraries in Ekiti State. The questionnaire distributed to over a hundred librarians across the tertiary institutions in Ekiti State juxtaposes the librarians' qualitative positions.

The first research question of this study centred on the level of digital reference service delivery by librarians in tertiary institutions in Ekiti State. The research question considers three primary dimensions in promoting digital reference service delivery in tertiary institutions in Ekiti State: synchronous, asynchronous, and frequency of use. The findings show that synchronous and asynchronous are mostly and frequently used in most tertiary institutions in Ekiti State. This analysis aligns with the position of one of the scholars who explains the significance of synchronous and asynchronous tools to the development of libraries. The tools like chatbots, voice-over-Internet Protocol (VOIP), social media platforms, email, online forums, instant messages, and web forms enable the librarians to provide real-time or delayed assistance, depending on the users' needs and preferences<sup>12</sup>. These digital tools have revolutionised tertiary institution libraries and changed users' expectations in digital reference service delivery.

The advancement of technology has given librarians a preference to engage their information seekers with these online tools beyond the library's four walls and turn them into the library in the pocket<sup>10</sup>. The diffusion of innovation theory (DoIT) also emphasises the importance of synchronous and asynchronous in digital reference service delivery as it promotes a new mode of communication in line with usability, interface, and the quality of the content and popularises the use of digital reference service to the broader community<sup>13</sup>.

However, the qualitative data used to juxtapose quantitative data analysis on the digital reference service delivery level indicates that asynchronous services are commonly used and preferred over synchronous ones. The findings show that asynchronous is not a new technique in the field of library; it is as old as the discipline itself. The librarians find the use of asynchronous preferable because the clientele's requests can be made available at their convenience. Also, the librarians of tertiary institutions in Ekiti state substantiated the rationale behind their inability to use the synchronous despite the crucial role in navigating a vast expanse of information regarding the digital reference service delivery.

The findings show that most librarians across the tertiary institutions in Ekiti State are not well exposed to the use of synchronous due to some susceptible factors identified as epileptic power supply, inadequate facilities (lack of internet facilities, unavailability of computer system, and uncondusive environment). This analysis aligns with some of the challenges identified by the diffusion of innovation theory, particularly the epileptic power supply and a complacent attitude toward synchronous and asynchronous innovation for reference service delivery. This made some scholars classify Nigerian tertiary institutions as laggard adopters due to their inability to meet the standard of expectation in digital reference service delivery<sup>11</sup>.

In addition, the study found that the lack of funds to train staff to be ICT compliant with adequate digital literacy skills, communication abilities, and knowledge of relevant

technologies has made it difficult for the librarians to use synchronous tools across the tertiary institution library in Ekiti. To further justify this, the literature shows that aside from the abovementioned factors, the synchronous tools may not be suitable for all users in all situations. One of the critical challenges of the use of synchronous, as identified by scholars, is the inability to guarantee clientele security protection while sourcing materials online. The instances were given on inadequate protection to safeguard users' confidentiality and privacy, making the users prone to information insecurity when communicating sensitive information<sup>12</sup>. Another scholar argues for the inability to balance virtual and in-person interactions to accommodate diverse users' preferences and ensure equitable access to library services<sup>13</sup>. The theory explains further the other techniques that librarians can adopt, such as Facebook, TikTok, Spotify, thread, Telegram, and YouTube.

The second research question examined the frequency of digital reference service delivery of librarians in tertiary institutions in Ekiti State to their clientele. The findings identify text messages, web-based, and ChatGPT as the most frequent communication channels used by the clientele to answer their queries. At the same time, some leverage the use of social media platforms (like Facebook, WhatsApp, TikTok, library websites, telephone support, real-time chats, and Instagram) to render digital reference service delivery effectively and accurately to their clientele. The findings show that using the tools mentioned above gives preference by offering multiple communication channels to provide access to expert assistance anytime, anywhere. It also allows users to receive help with research queries, database navigation, citation formatting, and other information-related tasks without visiting the library.

The study found that 42.1% were using e-mail, 37% phone support, 37.15 web-based chat, 36.63% ChatGPT, 36.6% text message, and 32.4% for real-time. The analysis above shows that most of the librarians in the Ekiti State tertiary institutions were more conversant with e-

mail, followed by web-based chat, phone support, and chat GPT, unlike real-time chat. However, the analysis above put a question tag on the report of some scholars on the frequency of use of digital tools in digital reference service delivery. For example, the literature shows that 80% of university librarians used e-mail, followed by instant messaging with 55%, and social media with 30%<sup>14</sup>. The frequent use of WhatsApp, Facebook, the library website, telephone support, TikTok, and Instagram was at the rate of 78%, 69%, 56%, 50%, 29%, and 20%, respectively<sup>15</sup>.

It was further explained that the frequency of use of digital tools varies from one tertiary institution's library to another, depending on the types of services required by the clientele. The study revealed the level of commitment of librarians to engage with users online daily, weekly, monthly, quarterly, or occasionally. This reflects the ability of librarians to assist the users, respond promptly to users' information needs, build a broader community, and maintain a consistent online voice. However, studies have shown that email and instant messages are more frequently used for digital reference service delivery.

The third research question focuses on the level of social media use by librarians in tertiary institutions in Ekiti State. The findings analysed the social media use level under three sub-constructs: level of use, frequency of use, and purpose. The study explains that the level of use of social media by the librarians of tertiary institutions in Ekiti State is moderate, and the frequency of use is at par. It also found that the librarians of tertiary institutions purposefully use social media to connect with the broader community users by making library information resources more accessible and available at the fingertips of their clientele.

The study provides insight into the frequency of librarians' use of social media for digital reference service delivery, revealing that social media is most frequently used to deliver unhindered services and search, retrieve, and disseminate information to clientele. It has also

been frequently used to respond to users' queries, provide research assistance, and guide clientele on effectively utilising digital reference service delivery in their various institutions. Also, the result analysis revealed that using social media as a collaborative platform with other institutions' libraries and to connect and interact with clientele are rare or occasionally, which indicates that most librarians in tertiary institutions in Ekiti State are not conversant with the use of social media platforms as a collaborative tool, connect and interact with their clientele for digital reference service delivery in their institution's libraries. However, this service is rendered chiefly when users have complex queries.

The quantitative analysis of the purpose of social media uses also found that librarians in tertiary institutions purposely used social media to connect with more comprehensive community users, provide research assistance and consultation, render reference services delivery, and provide real-time digital reference service delivery to their clientele. Also, use social media platforms to chat with friends and meet new people, give user instruction and a library tour, provisions for the library on the wheel for their clientele, and electronic document delivery services, outreach service, and library on the wheel. The findings also revealed that social media is also used for relaxation, entertainment, watching short movies and reels, viewing pictures, and playing games and sports apart from educational activities.

This aligns with the previous study's point on the significance of social media use as an online tool that offers social interactions, exchange of ideas and thoughts, and dissemination of information products and services between or among users with the same interests<sup>8</sup>. It is also a tool librarians use to promote their products, render library services, and effectively go beyond the library's four walls<sup>14</sup>. The results of the quantitative analysis revealed that librarians in tertiary institutions in Ekiti know the relevance of social media use in effectively promoting digital reference service delivery to their clientele by prioritising convenience, accessibility,

and familiarity of their clientele through library social media networking sites like Facebook, WhatsApp, and Telegram to render digital reference service delivery, followed by Scheduling and meeting tools such as Doodle, Google Meet, and Zoom and also chatting tools include Facebook Messenger, WeChat, WhatsApp, and Google Talk.

The findings show that more than 70% of librarians of tertiary institutions in Ekiti used WhatsApp, Facebook, messenger, and library websites. This justifies the position of a previous study, which found that over 50% of librarians were active on Facebook, WhatsApp, Twitter, and Messenger<sup>16</sup>. The result shows that librarians in most tertiary institutions in Ekiti state are unfamiliar with these remaining tools: Google Docs, Wiki, Mendeley, and Dropbox; Microblogging, such as Twitter; Conferencing tools, such as Skype, Viber, Line, Imo, and Google Duo, social tagging bookmarking such as Delicious, Cite, ULike, RSS, Podcasts, and Vodcast and Image and video sharing such as YouTube, SlideShare, Flickr, Printest, Instagram, TikTok when providing digital reference service delivery for their clientele.

Research Question Four has demonstrated librarians' high level of critical thinking skills in tertiary institutions in Ekiti State. It shows that librarians in tertiary institutions in Ekiti State exhibited a strong foundation in critical thinking skills. They actively analyze, evaluate, and synthesize information to make informed decisions and solve the information seekers' challenges and requests. The results show that the level of critical thinking skills of librarians in tertiary institutions in Ekiti State is above average (75%). That is, librarians in tertiary institutions in Ekiti State display a high level of critical thinking skills in providing digital reference service delivery. The study found that librarians in tertiary institutions in Ekiti State possess a deeper understanding of critical thinking skills, particularly the three (3) sub-constructs (recognition of assumption, evaluation of assumption, and drawing a conclusion) regarding digital reference service delivery. This indicated that librarians in tertiary institutions

recognise the importance of critical thinking skills in providing digital reference service delivery in this era of information overload (age)<sup>9</sup>. Another study highlights how critical thinking skills empower librarians to navigate the complexities of the contemporary digital information landscape, ensuring the audience of the librarians' competence in their field<sup>151</sup>.

The study unequivocally establishes the pivotal role of critical thinking skills in effective digital reference service delivery. Most respondents who are librarians recognise these skills as essential and explain how critical thinking skills equip them to meticulously evaluate and analyse online information sources' credibility, reliability, and validity before making them available to their clientele. This process ensures that the information shared is relevant and trustworthy, reinforcing the library's position as a trusted, authoritative source of knowledge. The literature also highlights the importance of critical thinking skills and how researchers consistently emphasise these essential aptitudes' central role in facilitating collaboration, driving innovation, and promoting continuous learning and professional development in digital reference service delivery<sup>17</sup>.

The study underscores that critical thinking skills are fundamental in fostering cooperation among librarians, subject experts, and stakeholders. Furthermore, the findings show the importance of critical thinking skills in digital reference service delivery, which enables librarians to move beyond mere information retrieval and instead provide value-added services that address the nuanced needs of their clientele. The findings also noted that librarians in tertiary institutions effectively employed critical thinking skills to evaluate information sources, identify bias, and draw conclusions. This proficiency enabled librarians to provide accurate and relevant digital reference service delivery.

However, the findings highlight some challenges librarians face in applying critical thinking skills for effective digital reference service delivery. These challenges include inadequate

training, a lack of resources, and a confidence deficit. Despite the importance of critical thinking skills in library and information science, the study reveals that the library profession often lacks the technological skills to evaluate complex information effectively. This shortfall hinders librarians' ability to deliver comprehensive digital reference services to their clientele. Acknowledging these challenges, the study calls on tertiary institution management to promptly consider potential solutions and support measures to address these issues, thereby enhancing the quality of digital reference service delivery.

In addition, the critical thinking framework also emphasises the importance of recognising and evaluating assumptions and drawing conclusions. These frameworks support the notion that librarians in tertiary institutions understand these sub-constructs better, enabling them to provide accurate and relevant information. The quantitative analysis results reveal that librarians recognise assumptions in tertiary institutions by identifying and acknowledging the underlying assumptions, biases, and presuppositions that influence information, arguments, or perspectives. The study found that the recognised assumption enables librarians in tertiary institutions to identify implicit or explicit assumptions in information sources and users' queries, recognize cultural, social, or personal biases, acknowledge potential flaws or limitations in arguments, and consider alternative perspectives. It also indicated that recognizing assumptions enables librarians to evaluate information sources critically, identify potential misinformation or disinformation, and provide balanced and unbiased information.

The analysis shows that librarians in tertiary institutions have more profound knowledge of actively gathering information from diverse sources to stay at the forefront of emerging technologies. They know how to recognize assumptions in user queries and provide accurate and reliable digital reference service delivery. They gather information from different points of view to offer their insights on recognizing assumptions and give culturally sensitive digital

reference service delivery. The finding aligns with the previous study on recognising assumptions in critical thinking skills as it explains its relevance in digital reference service delivery across tertiary institutions<sup>154</sup>. The literature shows how the RED model assists librarians in effectively and efficiently delivering quality information to their users. However, another study argues that recognising assumptions is insufficient without evaluating evidence and highlighting difficulties in recognising assumptions due to cognitive biases<sup>18</sup>.

Furthermore, the findings from the quantitative analysis reveal that librarians' evaluation of assumptions involves analysing and assessing the validity, relevance, and impact of identified assumptions. This enables librarians to determine the credibility and reliability of sources, evaluate evidence supporting or contradicting assumptions, consider multiple perspectives and potential biases, and determine the implications of assumptions. The analysis of the quantitative result revealed that librarians' evaluation of assumption provides evidence-based digital reference services delivery to community users and provides relevant responses to users' reference queries, which can help improve the accuracy and credibility of user responses. The result also shows that librarians in tertiary institutions can determine the relevance of information sources that will answer users' queries and identify biases in users' queries. The study also found that the evaluation of assumption is a fundamental aspect of critical thinking skills that enable librarians to assess the credibility, reliability, relevance, and accuracy of information obtained from social media platforms and other search engines. Librarians consider multiple viewpoints to answering users' culturally sensitive queries for effective digital reference service delivery. This aligns with the previous study, which opined that librarians effectively evaluate digital reference service delivery assumptions and analyze and interpret complex user queries without bias<sup>171</sup>.

The sub-construct draws a conclusion, which measures the ability of librarians to make informed decisions based on the assumption that it provides users with relevant information that will meet their needs. The results from the analysis revealed that making sound judgments on the assumption was accurate, reliable, and effective in providing digital reference services to a community of users and drawing conclusions based on multiple sources when providing digital reference services delivery. This aligns with the previous study, which emphasizes the importance of drawing conclusions in the critical thinking skills of librarians<sup>165</sup>. In addition, drawing conclusions is a fundamental aspect of critical thinking skills that enable librarians to synthesize, analyze, and interpret the information gathered from social media platforms and other search engines to provide informed responses to digital reference users' queries. Deliver logical and compelling digital reference service delivery patterns to improve their experiences. By drawing logical and well-supported conclusions, librarians can ensure that the information shared aligns with their parent institutions' academic needs and standard policies. Hence, the RED critical thinking skills are indispensable for librarians utilizing social media platforms for digital reference service delivery in tertiary institutions in Ekiti State. The study emphasizes the importance of critical thinking skills in challenging assumptions, evaluating, and exploring alternative perspectives before drawing conclusions<sup>165, 171</sup>. It is also noted that critical thinking skills require more than just recognizing and assessing assumptions; it demands a deeper understanding of logical reasoning and evidence-based decision-making, which some librarians may not possess this level of proficiency<sup>19</sup>.

Hypothesis one measures the influence of social media use on digital reference service delivery of librarians in tertiary institutions in Ekiti State. It was found that social media use significantly influences digital reference service delivery. The regression analysis results revealed that social media use accounts for more than fourteen percent of the positive changes in digital reference service delivery of librarians in tertiary institutions in Ekiti State. This

result aligns with the previous study, which indicated that social media use provides opportunities for tertiary institutions' libraries to offer digital reference service delivery and connect with broader community users<sup>156</sup>. Another study revealed that social media use allows librarians to market and display their digital reference sources and services, disseminate necessary information, display their library collection, and offer research assistance<sup>26, 21, 82</sup>. Providing digital reference service delivery through social media allows librarians to connect library information resources to clientele irrespective of their domain and build relationships with them<sup>21</sup>. This medium also provides users, particularly in tertiary institutions, to access information anytime and anywhere in the world<sup>78</sup>. Social media use in digital reference service delivery is essential for every tertiary institution, specifically in Ekiti State, to facilitate easy access to library information resources and the provision of the library in the pocket.

Hypothesis two measured the influence of critical thinking skills on digital reference service delivery by librarians in tertiary institutions in Ekiti State. The result of the study displays that critical thinking skills significantly influenced the digital reference service delivery of librarians in tertiary institutions in Ekiti State. The regression analysis results proved that the critical thinking skills of librarians account for more than seven percent of the success of digital reference service delivery in tertiary institution libraries. The finding shows that librarians in tertiary institutions in Ekiti State display high critical thinking skills when answering users' queries and searching for relevant information that will meet users' requests, specifically when recognizing bias in user queries and evaluating the source of information before drawing conclusions. This finding supported the previous study, which opined that critical thinking skills are a problem solver through rational, logical, and evidence-based thinking and making reasoning judgments on the request of their users<sup>31</sup>. Another study emphasizes the importance of critical thinking skills for librarians to develop new knowledge, improve research and presentation skills, and promote creativity and problem-solving in digital

reference service delivery <sup>32</sup>. The findings also indicated that social media use (14%) has nearly twice the influence on the success of digital reference service delivery compared to critical thinking skills (7%), underscoring the importance of enhancing critical thinking skills capabilities to optimize service effectively. This disparity prompts an essential question: are we neglecting the foundation of effective digital reference service delivery? The study revealed that critical thinking skills are the backbone of digital reference service delivery because they enable librarians to evaluate information, analyze complex queries, and provide accurate answers<sup>160</sup>. Without these skills, even the most sophisticated social media tools become ineffective.

The third hypothesis was tested on the synergistic effect of social media and critical thinking skills on digital reference service delivery of librarians in Ekiti State. The findings of this study revealed the importance of social media use and critical thinking skills in digital reference service delivery. It shows a positive correlation between these two variables, suggesting that librarians in tertiary institutions proficient in social media use and critical thinking skills are better equipped to provide effective and efficient digital reference service delivery. The findings have implications for librarians' training programs, digital reference service delivery strategies, and social media policy development in every tertiary institution, specifically in Ekiti State.

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## **Chapter Five**

### **Conclusion**

#### **5.1 Summary of Findings**

This chapter provides an overall summary of the findings. It also provides conclusions, recommendations, and contributions to knowledge based on the experience and findings. It also suggests areas for further research. The study's key findings, which emphasise the significance of digital reference service delivery in tertiary institutions, can be summarised as follows:

The study found that synchronous and asynchronous are moderately and frequently used in most tertiary institutions in Ekiti State as communication tools for digital reference service delivery. However, asynchronous tools are preferred over synchronous because they are one of the oldest methods used in tertiary institutions, where librarians respond to the requests of their clientele through e-mail and library websites. It should be noted that the librarian can attend to the answers to the user's query at a convenient hour.

The study found that text messages, web-based chat, and ChatGPT are the most frequent communication channels the librarians use to answer users' queries. At the same time, some leverage social media platforms (like Facebook, WhatsApp, library websites, telephone support, real-time chats, and Instagram) to render digital reference service delivery effectively and accurately to their clientele.

The level of social media use by librarians in the tertiary institutions in Ekiti State, coupled with the frequency and purpose of use, shows the relevance of social media

use in effectively promoting digital reference service delivery to their clientele. It shows that they prioritize convenience, accessibility, and familiarity when using WhatsApp, Facebook, and library social websites for digital reference service delivery to their clientele.

The study found that librarians in tertiary institutions in Ekiti State exhibited a strong foundation in critical thinking skills. They can actively analyze, evaluate, and synthesize information to make informed decisions and solve the information seekers' challenges and requests. That is, librarians in tertiary institutions in Ekiti State display a high level of critical thinking skills in providing digital reference service delivery to their clientele.

The test of hypothesis one shows that social media use positively influences librarians' digital reference service delivery in tertiary institutions in Ekiti State. This indicates that higher social media use leads to increased digital reference service delivery.

The test of hypothesis two shows that librarians' critical thinking skills significantly influenced the level of digital reference services delivery in tertiary institution libraries in Ekiti State.

The test of hypothesis three examines the combined influence of social media use and critical thinking skills on librarians' digital reference service delivery in tertiary institutions in Ekiti State with a significant effect. This indicated that the two variables jointly influence digital reference service delivery.

The interview sessions with heads of the tertiary institution libraries juxtapose the findings of the questionnaire administered to librarians. However, the interview also delves into some of the challenges librarians encounter in using social media platforms for digital reference service delivery to their clientele in their tertiary institutions in Ekiti State.

## 5.2 Conclusion

This study has provided comprehensive insight into the current situation of social media use, critical thinking skills, and digital reference service delivery in tertiary institutions in Ekiti State. It reveals the prevailing realities and challenges confronting librarians in various tertiary institutions of Ekiti State. Despite librarians' efforts to provide digital reference service delivery through both synchronous and asynchronous platforms, it is evident that these services still fall short of their potential. The existing infrastructure, training, and user engagement strategies are inadequate to effectively meet library clientele's evolving needs. Aside from this, epileptic power supply, inaccessibility to smartphones and computer systems, and unconducive environment coupled with internet connectivity challenges, among others, have hindered the effectiveness of digital reference services delivery in all tertiary institutions in Ekiti State. However, only Afe Babalola University (ABUAD) is better at digital reference service delivery, but it is not fully digitalised.

Furthermore, the lack of standardisation in service delivery and evaluation methodologies complicates assessments and improvement efforts. Despite the fact that social media is a vital tool for promoting digital reference service delivery and engaging with users, it is still underutilised in all tertiary institutions in Ekiti State. Librarians must develop strategic social media plans to enhance user experience, promote services, and foster community engagement beyond the library's four walls. Integrating critical thinking skills development into digital reference service delivery also remains inadequate. Librarians must prioritize information literacy programmes, encouraging critical thinking skills, adequate media literacy skills, and source evaluation skills.

Therefore, enhancing digital reference service delivery requires a multifaceted approach that will promote the library in the pocket. By acknowledging these challenges and working towards solutions, librarians can optimize digital reference service delivery, foster academic excellence, and support the success of tertiary institution library users.

### **5.3 Recommendations**

In line with the findings and conclusion of this study, the following practical recommendations are considered relevant:

Digital reference service delivery requires innovative approaches. Implementing AI-powered chatbots for initial reference queries, offering video conferencing-based reference services, and developing mobile-friendly digital reference platforms will ensure seamless user interaction. Integrating digital reference service into the learning management system and utilizing social media platforms for reference service delivery expands the library to connect with more users.

The libraries should explore an open-source chat platform that will facilitate synchronous and asynchronous modes of digital reference service delivery to meet modern user information needs since they are accustomed to the instant and seamless interaction.

Libraries must create guidelines for librarians to maintain a professional online presence to optimize social media use for digital reference service delivery. Thus, utilizing social media analytics enables tracking engagement and user feedback while leveraging social media for user education and information literacy, which enhances the library's outreach.

Tertiary institution libraries must develop mobile apps and user-mobile-friendly library websites to enhance digital reference service delivery.

The librarians should develop social media literacy skills to enhance professional development and user engagement.

Critical thinking skills are essential in today's digital landscape; integrating critical thinking exercises into library instruction and developing online tutorials on source evaluation and media literacy empowers librarians to navigate complex information. Meanwhile, collaboration with faculties to develop discipline-specific critical thinking training and providing workshops on fake news detection and disinformation enhances librarians' critical thinking skills.

Libraries should develop training programmes for effective software utilisation and staff development.

Leverage Artificial Intelligence for effective personalised digital reference service delivery.

Libraries should develop social media-based reference services and collaborate with faculties to promote social media-based research support, fostering a more inclusive and accessible learning environment.

Libraries should stay abreast of technological advancements and enhance user experience and engagement.

#### **5.4 Contribution to Knowledge**

This study makes significant contributions to the library and information science field, enhancing understanding of the intricate influence of social media use and critical thinking skills on digital reference service delivery by librarians in tertiary institution libraries in Ekiti State. Theoretically, this research advances knowledge of social media use in digital reference service delivery, shedding light on its potential to enhance information dissemination, user engagement, and librarian professional development. Furthermore, it underscores the

importance of critical thinking skills in digital reference service delivery, highlighting the need for librarians to evaluate information sources effectively and provide nuance guidance to users.

The study provides valuable insights into librarians' experiences, revealing gaps in training, infrastructure, and resource sharing. It informs library policy and practice, underscoring the need for targeted interventions to enhance social media use, critical thinking skills, and digital reference service delivery. The study also provides insights into the potential of transforming library practice and policy research, ultimately supporting institutional academic excellence and information access in tertiary institutions. The study also contributes to society in general. It helps expand knowledge on the importance of social media use and critical thinking skills in line with digital reference service delivery to provide easy access to information.

### **5.5 Suggested Areas for Further Research**

This study is centred only on tertiary institution librarians in Ekiti State. However, it leaves space for further research. It would have been more enriching if it had included library users in the respondents' population.

The study can examine the potential impact of social media use on critical thinking skills in digitalizing library service delivery.

The study can further investigating the impact of social media use and critical thinking skills of librarians on user information-seeking behavior.

The study can further be expand by include both librarians and users to gain a robust understanding.

The study can further expand to the role of critical thinking skills in evaluating social media sources.

The study can cover more geographical locations, including more tertiary nstitutions.

This suggested area for further research aim to build upon the current study's findings and recommendations, contributing to a deeper understanding of the complex influence of social media use, and critical thinking skills on digital reference service delivery of librarians in tertiary institutions.

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# Appendix I

**Lead City University, Ibadan**  
Faculty of Communication and Information Sciences  
Department of Information Management

Dear Sir/Madam,


**Research Project Attestation Form**

The bearer is a student of the above named University and Department. He/she is conducting a research and your establishment has been selected as one of his/her research samples. Kindly grant him/her all necessary assistance to make the exercise a success.

Please complete the following attestation form for the student on completion of the exercise. The completion of the form serves as evidence that the student actually carried out part of the study in your establishment.

Thanks for your anticipated assistance.

.....

**Head of Department (Signature, Date and Stamp)** 

Student's (Researcher) Surname..... Other Names.....  
Matriculation Number..... Programme (Degree, PGD, Masters and Ph.D)  
.....

**Project Topic:**  
.....  
.....  
.....

**Attestation Section**  
I hereby attest that the above named student conducted a study on the above named topic in my institution/establishment

Date(s) (Days) the Research was Conducted.....  
Names of Attester..... Designation.....  
Name and Address of the Institution.....  
Phone No..... E-mail Address:.....  
.....

**Signature, Date and Stamp**

## Appendix II

### Questionnaire

Department Of Information Management,  
Library and Information Science Programme  
Faculty of Communication and Information Sciences  
Lead City University, Ibadan, Oyo State, Nigeria.

Dear respondent,

The questionnaire elicits information on social media use, critical thinking skills, and digital reference service delivery from librarians in tertiary institutions in Ekiti State, Nigeria. The researcher seeks your candid response for completing a Postgraduate research work in Library and Information Science Programme. Your responses are purely for academic purposes and shall be treated with confidentiality.

Thanks

#### SECTION A: DEMOGRAPHIC PROFILE OF THE RESPONDENTS

1. Name of institution library: .....
2. Highest education qualification: B.Sc. ( ), M. Sc. ( ), PhD. ( )
3. Age range: 20-29 years, ( ) 30-39 years, ( ) 40-49 years, ( ) 50-59 years, ( ) 60 and above
4. Gender: Male ( ) or Female ( )
5. Job title/Position: .....
6. Year of Work experience: Below five years ( ), 6 -10 years ( ), 11-15 years ( ), 16- 20 years ( ), 21-25 years ( ), 26-30 years ( ), 31 years and above ( ).

Section B: Questions on Digital Reference Service Delivery by librarians in Tertiary Institutions in Ekiti state.

7. What is the level of digital reference service delivery by librarians in tertiary institutions in Ekiti State, Nigeria? (Select all that apply).

**Instruction: Please indicate the degree of your agreement with each statement. SA= Strongly Agree (5), A= Agree (4), N= Neutral (3), D= Disagree (2) and SD= Strongly Disagree (1)**

S/N	Mode of Digital Reference Service Delivery	SA	A	N	D	SD
	<b>Synchronous</b>					
1.	Synchronous is a communication channel that provides real-time interaction and immediate response to user queries through Real-time chat, Phone support, and ChatGPT					
	<b>Real-time Chat</b>					
2.	Real-time chat delivers digital reference services in my institution's library.					
3.	Real-time chat allows for timely and efficient answering of reference queries in my institution's library.					
4.	Using real-time chat for digital reference services has improved user satisfaction in my institution's library.					
5.	Real-time chat is easily accessible and user-friendly for patrons seeking digital reference services in my library.					
	<b>Phone Support</b>					
6.	Phone support is an effective channel for providing digital reference service delivery in my institution's library.					
7-	Phone support allows for timely and personalised responses to digital reference queries in my institution's library.					
8.	Using phone support for digital reference service delivery has improved user satisfaction in my library.					
9.	Phone support is easily accessible and convenient for answering users' queries in my institution's library.					
	<b>ChatGPT</b>					
10	ChatGPT is an effective tool for delivering digital reference services in my institution's library.					
11	ChatGPT has improved the efficiency of digital reference service delivery in my institution's library.					
12	I used ChatGPT to provide accurate, reliable, and immediate responses to digital reference queries in the institution's library.					

13	My institution's library has sufficient technical support, internet capacity, and resources to integrate ChatGPT effectively into the delivery of digital reference services.					
	<b>Asynchronous</b>					
14	Asynchronous communication is a communication channel that operates on a delayed response. It allows users to submit queries at their convenience and librarians to respond within a specified timeframe, often via email, text message, and web-based chat.					
	<b>Email</b>					
15	Email is used to deliver digital reference services in my institution's library.					
16	Email is my institution's library's most preferred digital reference service delivery channel.					
17	Librarians respond to users' queries through the library email without any constraint.					
18	Library patrons have attested to email as my institution's library's most preferred digital reference services delivery channel.					
	<b>Text Messages</b>					
19	Text messaging is an effective tool for providing digital reference service delivery.					
20	Text messaging helps me to understand users' needs and preferences better.					
21	I am comfortable using text messaging to communicate with users for digital reference service delivery.					
22	Text messaging is a convenient way to deliver digital reference services outside regular library hours.					
	<b>Web-base Chat</b>					
23	I find web-based chat an effective tool for providing digital reference services.					
24	I am comfortable using web-based chat to communicate with patrons for digital reference services.					
25	Web-based chat enables me to provide detailed and comprehensive responses to digital reference queries.					
	I find web-based chat an efficient way to manage multiple digital reference queries simultaneously.					

**8. What is the frequency of digital reference service delivery by librarians in tertiary institutions in Ekiti State, Nigeria?**

**Instruction: Please indicate the degree of your agreement with each statement. D= Daily (5), W= Weekly (4), M= Monthly (3), Occasionally (2), Never Use= NU (1)**

S/N	Frequency Use of Digital Reference Service Delivery	5	4	3	2	1
1.	How often do you use real-time chat to deliver digital reference service in your institution's library?					
2.	How often do you use phone call support to deliver digital reference service in your library?					
3.	How often do you use ChatGPT to deliver digital reference service in your institution's library?					
4.	How often do you assist your clientele through web-based library chat?					
5.	How often do you respond to reference queries through the library's email?					
6.	How often do you use text messages to deliver digital reference services in your institution's library?					

**9. What is the level of social media use by librarians in tertiary institutions in Ekiti State, Nigeria? Which Social Media platforms are you familiar with? (You can choose more than one)**

S/N	Social Media Platforms	Remarks
1.	Facebook, WhatsApps, TikTok, Telegram	
2.	Microblogging, such as Twitter	
3.	Social tagging bookmarking such as Delicious, Cite, ULike, RSS	
4.	Blogging such as WordPress, Blogger	
5.	Collaborative tools such as Google Docs, Wiki, Mendeley, Dropbox	
6.	Conferencing tools such as Skype, Viber, Line, Imo, Google Duo	
7.	Image and video sharing such as YouTube, SlideShare, Flickr, Printest, Instagram	
8.	Scheduling and meeting tools such as Doodle, Google Meet, Zoom,	
9.	Chatting tools such as Facebook Messenger, WeChat, WhatsApp, Google Talk, MSN,	
10.	Podcasts and Vodcast	

**10. How often do you use social media in your institution's library?**

**Instruction: Please indicate the degree of your agreement with each statement. D= Daily (5), W= Weekly (4), M= Monthly (3), Occasionally (2), Never Use= NU (1)**

S/N	Frequency of Social Media Usage	5	4	3	2	1
1.	My institution's library uses social media platforms to connect and interact with clientele.					
2.	My institution's library uses social media to search and retrieve information.					

3.	My institution's library uses social media as a collaborative platform with others in the institution.					
4.	My institution's library uses social media to provide research assistance and guidance for clientele.					
5.	My institution's library uses social media to promote the vision and mission of the University.					
6.	My institution's library uses social media to respond to users' queries					
7.	My institution's library uses social media to provide unhindered services to patrons.					

**Instruction: Please indicate the degree of your agreement with each statement. SA= Strongly Agree (5) A= Agree (4), Neutral= (3), D= Disagree (2), SD= Strongly Disagree (1)**

S/N	Purpose of Social Media Use	5	4	3	2	1
1.	To connect with more comprehensive community users.					
2.	To render reference services delivery to their clientele.					
3.	To make provisions for the library on the wheel.					
4.	To provide research assistance and consultation for the clientele					
5.	To provide real-time digital reference service delivery					
6.	To provide users with instructions and a library tour.					
7.	Collaborates with colleagues to solve users' complex queries					
8.	To provide electronic document delivery services for their clientele					
9.	To provide outreach programs					
10.	Collaborative Network-based service					
11.	To send a copy of a document					
12.	Online indexing and abstracting services					
13.	Current Awareness Service					
14.	Interlibrary loan					
15.	Relaxation and entertainment					
16.	I like watching short movies and reels, viewing pictures, etc.					
17.	Playing games and sport					
18.	Chatting with friends and meeting new people					
19.	Display library activities					
20.	To disseminate relevant information					

**12. What is the level of critical thinking skills of librarians in tertiary institutions in Ekiti State, Nigeria?**

**Instruction: Please indicate the degree of your agreement with each statement. SA= Strongly Agree (5) A= Agree (4), Neutral= (3), D= Disagree (2), SD= Strongly Disagree (1)**

S/N	Critical Thinking Skills	5	4	3	2	1
	<b>Recognition of Assumption</b>					
1.	Recognition of assumption is the ability of a librarian to critically identify information's credibility, reliability, accuracy, and relevance to the user's queries.					
2.	I find it easy to question the assumptions of users' queries.					
3.	Librarians are proficient in recognising the relevant sources to address users' reference queries.					
4.	I carefully examine assumptions from various perspectives.					
5.	I gather information from different points of view.					
6.	I actively gather information from diverse sources to stay at the forefront of emerging technologies.					
7.	Recognition of assumptions in user queries provides accurate delivery of digital reference services.					
8.	Recognising assumptions makes it important for librarians to identify biases in users' queries.					
9.	Recognition of assumption makes it easy to clarify unclear digital reference queries.					
10.	Recognition of assumption provides culturally sensitive digital reference services delivery.					
11.	Recognition of assumption allows librarians to identify gaps in digital reference queries.					
12.	Recognition of assumption provides evidence-based digital reference services.					
13.	Recognition of assumption provides personalised assistance in digital reference service delivery.					
	<b>Evaluation of Assumption</b>					
14.	Evaluation of assumption is the ability of a librarian to think critically in identifying information's credibility, reliability, accuracy, and relevance to users' queries.					
15.	I can identify gaps through different sources.					
16.	I can determine the relevance of information sources in answering users' queries.					
17.	I can provide evidence-based digital reference services to community users.					
18.	I can facilitate the analysis and interpretation of complex user queries.					
19.	I can help improve the accuracy and credibility of user responses.					
20.	I can provide relevant responses to users' reference queries.					

21	I can provide the credibility of sources and consider multiple viewpoints in answering users' queries.						
22.	I can provide credibility to online sources for effective digital reference service delivery.						
23.	I can recognise biases in users' queries.						
24.	I can analyse complex user queries.						
25.	I can provide culturally sensitive digital reference services delivery.						
	<b>Draw Conclusion</b>						
26.	Draw conclusion is the ability of a librarian to critically analyse, synthesize, and interpret users' queries.						
27.	I can draw conclusion by providing accurate, reliable, and effective digital reference services delivery to a community of users.						
28.	I can draw conclusions by identifying digital reference service delivery patterns and improving librarians' experiences.						
29.	I can draw conclusions and deliver logical and compelling answers to users' queries.						
30.	I can draw conclusions based on multiple sources when providing digital reference services.						

**Thank you for taking the time to complete this questionnaire.**

### Appendix III

#### Interview Question

##### Tertiary Institution Librarians Interview Schedule (Tilis)

Thank you for agreeing to participate in this survey for the completion of an M.sc study on Social Media Use (SMU), Critical Thinking Skills, and Digital Reference Service Delivery of Librarians in tertiary Institutions in Ekiti State, Nigeria. All information provided will be used only for educational purposes and kept anonymous and confidential. It will take you approximately 15 minutes to provide answers to questions on this interview schedule.

##### Demographic Information

Institution Name: \_\_\_\_\_

Gender: Female  Male

Age category: 31-40  41-50  51-60  61-70

Qualification: Masters  PhD  Others

What do you understand by Digital Reference Service Delivery (DRSD)

.....  
.....  
.....

What digital reference services delivery modes are you adopting in your institution's library?

.....  
.....  
.....

How often do you use digital reference service delivery in your institution's library?

.....  
.....  
.....

4. What is the level of social media use in your institution's library?

.....  
.....  
.....

5. What are the most frequent Social Media Platforms you use in your institution's library? .....

.....  
.....  
.....

6. For what purpose does social media use to benefit your institution's library?

.....  
.....  
.....

7. What do you understand by critical thinking skills, and can you assess the level of your librarians in this respect?

.....  
.....  
.....

8. Can you describe a situation where you recognised an assumption in a digital reference query? How did you address it?

.....  
.....  
.....

9. How do you evaluate the credibility of online sources for digital reference queries?

.....  
.....  
.....

10. Can you give an example of a digital reference query where you had to draw a conclusion based on incomplete information retrieved from social media platforms?

.....  
.....  
.....

Thank You

### **Bio-data**

#### **Personal Data**

<b>Full Name</b>	Hasanat Adeola BABARINDE
<b>Sex</b>	Female
<b>Date and place of birth</b>	26 <sup>th</sup> of May, 1990
<b>State of Origin / L.G. A.</b>	Osun State / Ife East local government
<b>Nationality</b>	Nigeria
<b>Marital status</b>	Single
<b>Name of Next of Kin</b>	ASIYANBI Serifat (PhD.)
<b>Address of Next of Kin</b>	Department of History & International Studies, Federal University Oye-Ekiti, Ekiti State.
<b>Postal Address:</b>	Otunba Adeola Lane, Irewolede Estate, Ado-Ekiti. Ekiti State
<b>Phone Number</b>	07039577810/ 08110374199
<b>E-mail address</b>	<i>babarindehasanat@gmail.com</i>

#### **Educational Background**

Lead City University, Ibadan, Oyo State	Msc in view
Tai Solarin University of Education (TASUED), Ijebu Ode	2015 -2019
Federal Polythecnic Offa, Kwara State	2010- 2012
Islamic Comprehensive College, Ede	2001- 2007

Islamic Group of School, Ede 1994-2001

**B. Pure Academic Qualifications (with dates):**

NYSC Exception letter 2019

BLIS Library and Information Science 2019

OND Library and Information Science 2012

NECO 2008

NECO 2007

**C. Work Experience**

Crescent University, Abeokuta 2017- 2019

**Unpublished Project Completed with dates:**

Undergraduates' Awareness, Perception and Utilization of Crescent University Library, Abeokuta, Ogun State (2019). A project submitted to the Department of Library and Information Science, College of Specialized and Professional Education, in partial fulfilment of the requirements for the award of the Bachelor Degree (BLIS) in the department of Library and Information Science, Tai Solarin University of Education Ijagun, Ijebu-Ode , Ogun State.

Organization and Utilization of Africana Section: A case study of Hezekiah Oluwasanmi Library, Obafemi Awolowo University, Ile-Ife. A project submitted to the Department of Library and Information Science, School of Communication Information Technology, in partial fulfilment of the requirements for the award of the Ordinary National Diploma (OND) in the department of Library and Information Science, Federal Polytechnics Offa, Kwara State. 2012.

**Major Training Programme / Seminar attended with date**

Computer Training Programme

2014

Annual General Meeting (AGM); Titled: Library: A Social Tool. Organized by the Nigerian Library Association, Ogun State Chapter, held at Federal College of Education Osiele, Abeokuta, Ogun State.

2019

### Referees

#### **Prof . A. O. Simisaye**

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#### **Dr. I. B. Igbenegbu**

Hezekiah Oluwasanmi Library,  
Obafemi Awolowo University, Ile-Ife  
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.....  
Signature

.....  
Date

### **The University Compliance Certification**

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