Chapter One

Introduction

1.1 Background to the Study

Motivation to use new technological innovation is a key factor to consider when examining the use and implementation of new technological systems especially within the library space. In this regard, researchers have made attempts to identify various factors that influence users' perceptions, motivations and behaviour towards technological innovations particularly digital technologies like AI technologies. These efforts have resulted in developments of theories, models and frameworks which have outlined different popular motivational constructs such as perceived benefits, perceived usefulness, resources availability, and organizational objectives.

Since the turn of the 21st century the library landscape has witnessed a significant improvement in the use and adoption of different varieties of technologies[2]. As a result, librarian have learned to integrate various technological innovation such as the internet, CD ROM, Online Public Access Catalogue System (OPAC), Library Management Systems (LMS) to provide seamless service functions to users. However, the need for improved mechanization of human process, greater speed, social network and utilization of big data are some factors which have given rise to a more intelligence technology like AI[3]

The term artificial intelligence often describes computing systems that exhibits some form of human intelligence. It covers a number of interlinked technologies that has the ability to simulate human intelligent processes. As a field of study, AI concern itself with the creation of computer system that exhibit some forms of intelligence. These include system that can learn new things, understand natural language, appreciate visual scenes, reason independently, and draw useful conclusion about the world around them. The emergence of AI technologies

has had significant influence on numerous professions and service industries including health, engineering, finance, banking, sport, and librarianship[4]. The creation of this intelligent technology involves the skillful fusion of diverse knowledge fields such as neuroscience, philosophy, psychology, computer science, cognitive science, economics, logic, control theory, optimization and probability.[5] The fusion of these knowledge disciplines empowers AI systems to perform myriad of intelligent tasks, including speech and facial recognition, control systems, quantum computing, and deep learning[6]. The goal of this technology, is to train machines to learn, reason, and perform feat that require human like intelligence in solving daily challenges[7].

There are different kinds of AI available for librarians to use. While many AI implementations take the form of machines, some exist as computer programs, applications or software. For instance, google assistant which was reported in a recent study as the most commonly used AI tool among librarians in Nigeria, is a mere program that enhances search process on digital or android devices. It leverages artificial intelligence and facilitates two-way conversation using Google's natural language processing algorithm. Others in this category include IBM Watson and Chatbots. These are essentially software applications designed to simulate human-like conversations on online platforms, using text to speech interaction.

In the library landscape, this kind of AI technology may be referred to as digital assistant or reference librarian. Because it enables users to interact with systems and obtain answers to queries without direct contact with a human agent. A study on the level of AI adoption, shows that most individual including librarians, interacts with AI on a daily basis, often without realizing that such technology constitutes AI in the form of a "virtual assistant". The technology significantly helps in enhancing browsing experience in the digital domain. This assertion, was supported by the Association of College and Research Libraries (ACRL)

which observe that some academic librarians might say they lack a foundational knowledge of AI or that they are not skilled enough to speak on the subject, yet they have likely been interacting with AI through different types of software applications they support. At the very least, they have encountered and mastered the art of search algorithm. In light of this, a Nigerian scholar pointed out that AI is not a novel concept in the library environment, as many have experienced with it on multiples occasions. However, another scholar contended that the university of Lagos is the sole institution in the country to have integrated AI into library services and operations. The researcher suggests that the use of AI for libraries services and operation is very low. It should be noted that there are different kind of AI technologies in operation and the AI robots being used by librarians in the University of Lagos is just an aspect of this vast technology.

To comprehend the full nature and scope of AI, it is essential to examine its various feature. The features of AI include machine learning, natural language processing, expert system, robotics, computer vision, just to mention a few. Each of these features can be adapted to suit specific library related functions. Therefore, AI application in libraries and by librarians goes beyond a particular example, understanding its diverse features is crucial to harnessing its potential across the library landscape.

Indeed, many libraries all over the world have embraced and integrated various AI computers into their operations. despite this progress, certain misconceptions persist, particularly among librarians, regarding the potentially disruptive nature of this innovation. There is a prevailing concern among librarians about the possibility of losing their jobs to these intelligent systems. While this apprehension holds some validity, it is crucial to recognize that this study also acknowledges the potential for librarians and libraries to capitalize on this technology and offer enhanced and dynamic services to their patrons. the use of AI technology holds significant advantages, in automating manual processes. Particularly, it facilitates quicker

access to information, enhances service efficiency, boosts productivity, and ultimately improves user satisfaction. Thus, AI presents an opportunity for transforming traditional library functions.

It self-evident that we cannot ignore the uncertainties that exist among librarians in the use of AI. However, the proper adoption and utilization can lead to substantial benefits for both librarians and library users. The key lies in embracing these technologies to its fullest potential and leveraging its intelligent capabilities to elevate library services and experiences. AI technologies such as ChatGPT can help perform simple or technical tasks such as basic research, proofing, grant application writing. A study of ChatGPT examined its ability to provide peer review of academic paper. The study revealed that ChatGPT may be able to aid predicting whether a paper will be accepted or not by research Journal.

The second misconception about AI, is that the technology is based on the "garbage in" "garbage out" (GIGO) principle. This belief is obviously not accurate. The behaviour and capabilities of AI systems depend on the type of AI being used. AI technology can be broadly categorized as weak or narrow AI and strong or general AI[33]. Weak AI, also known as artificial narrow intelligence, is designed to focus on specific and narrow tasks. This AI system focus on solving specific problems and are not capable of general human kind of intelligence[34, 35]. Examples of weak AI include voice assistants like Google Assistant Alexa or Siri. Others in this category are ChatGPT, recommendation systems and image recognition software. They are programmed to perform particular functions with high efficiency. However, they are limited in scope and cannot function without human interaction.

On the other hand, strong AI, also known as artificial general intelligence (AGI), possesses the capability to perform most, if not all, cognitive functions that a human can do and can apply intelligence to various problems, not limited to a specific domain. This system

possesses the ability to learn, understand, and apply knowledge across a wide range of task. The goal of this kind of AI is simply to replicate human kind of intelligence capabilities[36]. Although, true AGI is yet to be fully achieved, their development gives us the idea that AI technologies do not strictly adhere to GIGO principle, as they can adapt and from data and experience.

In the context of librarianship, several AI technologies can be adopted for professional and personal operations. Example include chatbots, robots, drones, googles assistant, google translator, google bard, and ChatGPT. Among these AI technologies, chatbots google assistant, and robots are the commonly known have been used to some extent by librarians in the Nigeria.

Motivation as a concept, is an essential element in determining individual's attitude and disposition toward AI systems. Thus, requires moderate consideration in this discuss. The term "motivation" is derived from the Latin word 'movere' means "to move." It is defined as the process that initiates, guides, and maintains goal-oriented behaviour. Motivation is a combination of biological, emotional, societal, and cognitive elements that help to stimulate behaviour in people. In the ordinary parlance, the term is used widely to depict the reasons behind people's actions. The needs or desires that underlie behaviour and provide an explanation for what we do.

Motivation is usually classified into two groups, that is, intrinsic or extrinsic motivation. Intrinsic motivations refer to the internal drive or desire to engage in an activity or behaviour for its own sake, without any external rewards or incentives. It is driven by personal enjoyment, interest, satisfaction derived from the activity itself. Intrinsic motivation is often associated with the feeling of autonomy, competence, and relatedness, and it can lead to increased engagement, creativity, and persistence in pursuing goals or tasks. Extrinsic motives are those that come from outside of the person and frequently involve prizes like

medals, cash, accolades, or social recognition. These motivations are typically external to the activity itself and can also include factors such as praise or approval from others. Extrinsic motivations can be effective in motivating individuals to perform certain tasks or achieved specific goals.

Therefore, motivation can be externally derived in this sense that it is stimulated by an organizational objective. However, from individual perspective, scholars have tried to study the factors that motivates the use of technological innovation. Specifically, factors such perceived benefits, ease of use, and the level of support and training provided have been highlighted as factors that motivates users[1]. However, for this study, the researcher from theoretical point of view has decided to use perceived ease of use and perceived usefulness as a motivating factor for the use of AI technologies among librarians.

The construct of Perceived Usefulness and Perceived Ease of Use (PEOU) have received wide validations for explaining users' propensity to use new technological innovation such as AI technologies[8]. In fact, models such as Technology Acceptance Model (TAM) is considered useful to assess user intention to adopt and perception of fitness and usefulness. TAM has received support in similar context. TAM predict that the use and acceptance of a technological innovations depends on two fundamental constructs; perceived usefulness (PU) and the perceived ease of use (PEOU). The two constructs determine individual's favourable or unfavourable disposition toward the technology. Although, TAM is a widely used theoretical framework for understanding users' attitude and intentions towards adopting new technologies[9]. Its emphasis centre on user perception of the level of ease, usefulness and design on intention to adopt[10]. However, external variables in TAM framework explains other

factors that may motivate user toward the technology. Thus, it is very useful to determine the level of motivation for using new technology like AI. However, this study will be anchored on the security stimulus research theoretical framework proposed by P.C. Lai. The framework is an extended version of the Technology Acceptance Model (TAM) and it is deemed suitable for this study. The researcher posits that system design and security are stimulus that represent the system, whereas the perceived usefulness and perceived ease of use are factors that represents the motivation to use the system (in this case AI technologies)[11]. The framework proposed that system features and capability are stimulus for the use of a system. This stimulus is defined by the system designed and security. Furthermore, it proposed that user's motivation to use the system, will be determine by its perceived usefulness and perceived ease of use.

Perceived usefulness refers to a person's belief in how much a specific technology can improve or enhance their job performance. Perceive usefulness in the context of AI technologies, refers to the degree to which users' belief that using AI systems or applications will enhance their productivity, efficiency and overall performance in achieving specific task or goal. Several factors contribute to the perceive usefulness of AI technologies; improved efficiency, accuracy and reliability, personalization, problem solving capability, user friendly interface and compatibility just to mention few. On the other hand, perceived ease of use examines an individual's belief in the minimal effort required to use that particular technology. In the context of AI technologies, it refers to the extent to which users believe that utilizing and interacting with AI system and applications is effortless and uncomplicated[12].

More so, perceived usefulness and perceived ease of use have been recognized as major stimulants for most technological innovation adoptions. While perceived usefulness is used to explain the degree, to which a user believes that using a particular system or technology, will

enhance effectiveness and efficiency, perceived ease of use is used to explain the degree to which a user believes that using a particularly system or technology will be stress free and effortless. This two therefore can be motivating factors that influence the use of AI technologies.

Other factor that could predict the motivation to use AI technologies are level of awareness (using the metric of perception, comprehension and Projection) and the level of digital competence among librarians. These variables will form the basis for this study.

Situation awareness or situational awareness (often abbreviated as SA) is a concept that originated from aircraft pilot community. It refers to the capacity to perceive, comprehend, and interpret necessary information about a particular situation in order to make effective decisions and take appropriate actions. In plain language, situation awareness is an appropriate awareness of a situation. The idea was initially identified by Oswald Boelke during World War 1 in an attempt to gain awareness of the enemy and devised method in accomplishing their plot. However, the concept gained less attention until the late 1980s when it was first sufficiently described and applied by Mica Endsley[13]. While applying the concept within the aviation sector, Endsley defined situational awareness as the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future[14]. Endsley's definition became the basis for which a theoretical framework was developed. The theoretical framework is divided into three cognitive levels as; Level 1, Level 2 and Level 3[15].

The model which shows the dynamic interaction between humans and their environment follows a sequential process, starting from level 1, 2 to level 3. These three levels represent the key components of situation awareness that is, perception (being able to detect and observe relevant information), comprehension (i.e., understanding the meaning of that

information), and projection (i.e., predicting what might happen next). Effective situation awareness involves the ability to prioritize and filter information, integrate different sources of information, and maintain attention overtime. Therefore, situation awareness is essential cognitive skill that plays a critical role in decision making in a variety of real-world situation. Situation awareness is belief to be the basis for making accurate decision in different life situations[16].

Using Endsley's model, level 1 in this regard may involve the actual awareness of the AI technologies as a tool for librarians. Level 2, entails the level of information available to librarians about the purpose of artificial intelligence technologies, particularly when integrated in relation to their professional and personal goals. In other words, this could also mean analysing the benefits of AI technologies to improve work performance within the library ecosystem. Whereas, level 3 of this cognitive process, entails an understanding of what will happen with AI technologies in the near future. Again, this may involve taking precaution to prevent negative effect of lagging in the adoption of AI technologies or the consequences an individual or group of people may face for using AI technologies. Such consequences may include loss of job for librarians.

Situation awareness, in this context of AI adoption among librarians, refers to the level of understanding and perception that librarians have regarding the potential benefits, challenges, and implications of integrating artificial intelligence technologies into their library service and workflows. AI adoption in libraries has potentials to revolutionize how librarians deliver services, manage collections, and interact with patrons. Some key aspects of situation awareness in this context include understanding AI capabilities, awareness of the benefits of AI, librarians should also be awareness of the challenges and risk associated with AI integration. These could include issues of privacy, data security, algorithms bias, and the possibility of displacing people of their job roles. Having a high level of situation awareness

allows librarians to make informed decisions about whether and how to adopt AI technologies.

It is important at this point, to note that situation awareness (SA) as adapted in this study is essentially different from the variable of awareness common in most literature in library and information science (LIS) regarding librarians' perception of an emerging technology. The latter refers to the ability to know the existence of something or an object in a certain environment for use[17]. Awareness is having knowledge about something that exist or understanding of a situation or subject at the present time based on information or experience[18]. The cognitive prediction of future use represented in Endsley's theoretic framework makes both concepts remarkably different hence, justifying the need for a scholarly investigation on the situation awareness as a construct for this study. However, in deserving circumstances, both concepts, that is "situation awareness" and "awareness" may be used interchangeably. In addition to situation awareness, other variables that could predict the use of AI technologies among librarians, is the level of their digital competence.

Digital competence also known as digital literacy skills, refers to the ability of individual to effectively and responsibly use digital technologies or tool[19]. It involves a combination of technical, cognitive and social-emotional skills that enable individuals to navigate the digital landscape with confidence and proficiency[20]. Digital competence is one of the competences required of every modern citizen including librarians to thrive in the digital age. The European Union considers digital competence as one of the crucial skills for life long leaning and it is essential for active participation in our digitally driven information and knowledge society[21]. This study therefore aims to assess the level of digital competence among librarians in their use of artificial intelligence technologies for library and information science delivery. To gain comprehensive insight what this concept truly entails, it is pertinent to establish clear definitions of the concept of digital competence and reveal in literature.

Digital competence may be defined as the confident, critical and creative use of Information Communication Technology (ICT) to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in digital society[22]. Similarly, it may be broadly defined as those set of knowledge, skills and attitude that are required when using ICT and digital media to perform tasks; solve problem, communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexible, ethically, reflectively for work, leisure, participation, learning, socializing, consuming and empowerment[23]. In other words, digital competence refers to the set of skills, knowledge, and attitudes, required to effectively use digital technologies, tools and resources. It may include the ability to use digital devices and software, navigate the internet, communicate through digital platforms, find and evaluate information, create digital content, and use digital technologies to solve problems and accomplish tasks. Digital competence is becoming increasing important in our present technological landscape, as technology continues to play a central role in many aspects of life, from work and education to socializing and entertainment[24]. It is essential for individuals to develop digital competence to participate fully in society and the economy, and to succeed in a range of professional fields.

AI technologies and digital competence are closely intertwined. AI technologies are core component of digital competence. AI technologies are important in the digital landscape, as they enable automation, analysis, and decision-making based on vast amounts of data. AI can help individuals and organizations make better decisions, automate routine tasks, and optimize processes. To use AI technologies effectively, individuals need to have a certain level of digital competence. They need to be able to understand how to use AI tools, analyse and interpret the output of these tools, and make informed decisions based on the data they generate. Conversely, AI technologies can also help to improve digital competence. For

instance, AI-powered language learning apps can provide personalized feedback and guidance to learners, helping them to develop their language skills more quickly and effectively. AI technologies and digital competence are mutually reinforcing, and both are essential components of a modern digital skillset. As AI technologies continue to develop and become more prevalent, it will become increasingly important for individuals to develop their digital competence in order to leverage the full potential of these technologies.

The importance of such competencies cannot be overemphasized. Thus, digital competence has become one of the parameters for determining job position or description in the 21st century[25]. Accordingly, digital competence is essential for every librarian in the digital age to accomplish professional goals. The concept of digital competence is sometimes used synonymously with digital literacy. Over the years, this concept has evolved through different stages, from the concept of computer skills to ICT skills to digital skills to digital competence[26]. It was opined that the concept digital skills have more features than digital competence[27]. This position may not be true because digital competence has a broader meaning than any other concept relating to technological skills. Again, digital competence includes other areas such are critical thinking in the use of new technologies and media, safe and responsible use, risk awareness, and ethical and legal considerations. Unfortunately, when discussing the issue of digital competence, people often focus on acquisition of ICT skills with less emphasis on other areas[28].

In view of the above, the researcher averred that being digitally literate suggests that the individual has abilities such as understanding media, searching for information and being critical of what is retrieved and has the ability to communicate with others using a variety of digital technologies. Thus, library professionals are expected to upgrade their skills and competency to succeed in the digital age and to fully participate in the opportunities and challenges of a rapidly changing world[29].

Digital competence as described by the European Union digital competence framework (known as the DIGCOMP framework) which consists of 21 competencies is grouped under six constructs. The specific constructs included in this framework are information and data literacy, communication and collaboration, digital content creation, digital safety and security, problem solving and digital citizenship[30]. The Digital Competence Framework is important to the our discuss because, it addresses the skill required for interacting with AI technologies. Firstly, it emphasized information management skills, which are relevant for effectively accessing, evaluating, and using AI generated information. Secondly, the framework emphasized communication skills. This includes ability to effectively communicate with AI systems and understand their responses. Also, the framework, highlights problem solving skills, which are essential for identifying and addressing challenges that may arise with interacting with AI system. Finally, the framework also emphasized online safety, including the ability to understand and mitigate potential risks associated with AI system. These constructs are frequently interconnected, and a comprehensive digital competence framework will encompass each of them to varying degrees. However, the current study will concentrate on selected constructs that directly align with its objectives. Consequently, not all constructs will be taken into account. Specifically, digital citizenship will be omitted from the scope of this study as it is already covered within the realm of safety and security.

Situation awareness, digital competence, and motivation to use AI technologies are interconnected factors that may influence each other. The relationship between these variables can be seen as mutually reinforcing. Librarians who possess a high level of situation awareness are more likely to recognize the importance of digital competence and the potential benefits of AI technologies. This awareness can motivate them to develop their digital competence and actively seek out opportunities in incorporate AI technologies into their work. On the other hand, librarians with high digital competence are better equipped to

understand and adapt to the changing information landscape, including the integration of AI technologies. Their proficiency in using digital tools and resources enables them to effectively leverage AI technologies to enhance their services. Furthermore, motivation plays a significant role in inspiring librarians to use AI technologies. Librarians who are motivated to use AI technologies are more likely to in invest time and effort in developing their competence and staying updated with the latest advancements in the field.

1.2 Statement of the Problem

The changing technological landscape demands that librarians embrace emerging technologies to optimize their service functions. Modern technologies have redefined traditional librarian roles, addressing new challenges in the library space. During the Covid-19 pandemic, certain technologies enabled librarians to provide on-the-go reference services when physical access to the library was restricted. Among these technologies, AI stands out as a potent tool to augment librarians' service capacity and enhance library smartness. However, AI adoption depends on critical factors like awareness (using the metrics of projection, comprehension and prediction) and digital competence, which will be the focal points of this study.

While some researcher examined AI in library and information science professions, most studies have focused on libraries in advanced nations with high levels of AI awareness and usage. Surprisingly, there is a dearth of literature on AI adoption in the global south, particularly from the African region, despite its evident benefits. Preliminary observations suggest a low level of AI usage among librarians in Edo and Delta States, Nigeria. This may be attributed to their situation awareness and digital competence. Thus, this study seeks to investigate the levels of situation awareness, digital competence, and motivation to use AI technology among librarians in Edo and Delta States, Nigeria.

1.3 Aim and Objectives of the Study

The aim of this study is to investigate the influence of situation awareness and digital competence on motivation to use artificial intelligence technologies among librarians in Edo and Delta States. Specifically, the study seeks to:

i. identify the level of motivation to use artificial intelligence technologies by librarians in Edo and Delta States;
ii. identify the level of situation awareness of artificial intelligence technologies among librarians in Edo and Delta States;
iii. identify the level of digital competence among librarians in Edo and Delta States;
iv. examine the influence of situation awareness on motivation to use artificial intelligence technologies among librarians in libraries in Edo and Delta States;
v. determine the influence of digital competencies on motivation to use artificial intelligence technologies among librarians in Edo and Delta States;
vi. ascertain the joint influence of situation awareness and digital competencies on motivation to use artificial intelligence technologies among librarians in Edo and Delta States.

1.4 Research Questions

The following questions will guide the study.

i. What is the level of motivation to use artificial intelligence technologies by librarians in Edo and Delta States?
ii. What is the level of situation awareness among librarians in Edo and Delta States?
iii. What is the level of digital competency among librarians in Edo and Delta States?

1.5 Hypotheses

The following null hypotheses were formulated for the study and will be tested at 0.05 level of significance.

$H_0$1: There is no significant influence of situation awareness on the motivation to use artificial intelligence technologies among librarians in Edo and Delta States.

$H_0$2: There is no significant influence of digital competency on the motivation to use artificial intelligence technologies among librarians in Edo and Delta States.

$H_0$3: There is no significant joint influence of situation awareness and digital competency on the motivation to use of artificial intelligence technologies among librarians in Edo and Delta States.

1.6 Significance of the Study

This study will benefit librarians, library administrators, professional bodies in library and information science as well as researchers. The study will benefit librarians as it is expected to ascertain the librarians' level of awareness of the nature of artificial intelligence technologies as well as highlight factors that could motivate librarians to use AI technologies. Also, the recommendations from the study, when implemented, will be of great benefits to librarians on the long run in embracing and interacting with similar technologies to enhance their job performance in future.

Library administrators will benefit from this study as the outcome of this study will enable library administrators to make informed decisions and develop programs that will improve digital competence among librarians in using AI tools especially in developing countries, like

Nigeria. The study will enlighten library administrators on the relationship between situation awareness and digital competence in the adoption and utilization of artificial intelligence technologies.

Furthermore, important stakeholder in library and information profession such as Library Registration Council of Nigeria (LRCN), Nigerian Library Association (NLA) and African Library & Information Association (AFLIA) will benefit from this study. The findings from this study will guide these policy makers in the area of policy formulation and implementation. The outcome and recommendations from the study will guide policy makers to chart the right course of action aimed at improving digital competencies among librarians. This will ultimately help is closing the gap of digital bias in the global south.

The recommendations from this study will enhance the adoption and use of artificial intelligence among librarians. Also, researchers will benefit from this study as the result of this study will serve as a valuable literature for future researches in a similar area.

1.7 Scope of the Study

The study will examine the influence of situation awareness and digital competence on motivation to use artificial intelligence technologies among librarians in Edo and Delta States The dependent variable is motivation to use artificial intelligence technologies which will be measured by perceived usefulness and perceived ease of use. The independent variables are situation awareness and digital competence. Situation awareness will be measured by perception, comprehension, and projection. Digital competence will be measured by information and data literacy, communication and collaboration, digital content creation and digital problem solving. The population of the study will comprise librarians with a minimum of Bachelor degree in Library and Information Science from public and private universities in

Edo and Delta States. According to the National University Commission at the time of this study, there are eight universities in Edo State. They are University of Benin, Benin City; Ambrose Alli University, Ekpoma, Edo State University, Uzairue; Benson Idahosa University, Benin City; Igbinedion University, Okada; Glorious Vision University, Ogwa; Well Spring University, Evbuobanosa; Mudiamen University, Irrua. Meanwhile, Delta State had nine universities. They are, Federal University of Petroleum Resources, Effurun; Admiralty University, Ibusa; Nigerian Maritime University, Okerenkoko; Delta State University, Abraka; Edwin Clark University, Kaigbodo; Michael and Cecilia Ibru University, Agbara-Otor; Western Delta University, Oghara; Dennis Osadebey University, Margaret Lawrence University, Umunede and Sport University of Nigeria, Idumuje-Ugboko.

1.8 Limitation of the Study

One of the major limitations faced during this study was the difficulty in getting the respondents to complete the questionnaire. This was primarily due to the fact that one of the institutions involved in the study was under lock down due to strike action. However, for other institutions, there was reluctance from some respondents to attend to the questionnaire. To address these issues, I took the initiative to convert the questionnaire to Google form and send to the librarians through their WhatsApp platform. However, for the other institutions, I had to constantly remind them to complete the questionnaire.

1.9 Operational Definition of Terms

Motivation to use artificial intelligence technologies: this refers to the willingness, incentive and reason for using artificial intelligence technologies among librarians in Edo and Delta States.

Perceived ease of use of artificial intelligence technologies: refer to the extent to which librarians in Edo and Delta States perceive that using artificial intelligence technologies will be stress free and effortless.

Perceived usefulness of artificial intelligence technologies: refer to the extent to which librarians in Edo and Delta States perceive that using artificial intelligence technologies will enhance their effectiveness and efficiency.

Situation awareness: this is the conscious awareness of the existence, benefits, and relevance of artificial intelligence technologies among librarians in Edo and Delta States.

Perception: this is the situation whereby librarians in Edo and Delta States are aware of the existence of artificial intelligence technologies for personal and professional use.

Comprehension: this entails the level of information available to librarian in Edo and Delta States about the purpose of artificial intelligence technologies and how it works in their institutions.

Projection: this is the ability of librarian in Edo and Delta States to understand the danger or benefit posed by the use of artificial intelligence technologies.

Digital competence: this refers to the skills set required by librarian in Edo and Delta States to use digital technologies such as artificial intelligence effectively. Digital competence encompasses several constructs such as information and data literacy, communication and collaboration, digital content creation, digital safety and security, digital problem solving.

Information and data literacy: these refer to the ability of librarians in Edo and Delta States to evaluate, find, and use digital data and information effectively and ethically.

Communication and collaboration: these refer to the ability of librarian in Edo and Delta States to use digital technologies to communicate and collaborate with others, including through social media, email, video conferencing, and other digital tools.

Digital content creation: is the ability of librarians in Edo and Delta States to create and edit digital content, such as text, images, audio, and video, using a range of tools and platforms.

Problem-solving: this involves the use of the skills, strategies, and approaches in solving digital related problem by librarians in Edo and Delta States.

Safety and security: this involves the use digital technology to confidently and responsibly navigate the digital landscape without causing harm to oneself or to others by librarians in Edo and Delta States.

Librarian: This refers to persons with a minimum of Bachelor degree in librarianship in pursuant to the provisions of the Librarian (Registration, etc.) Council of Nigeria Act Cap. L13 Laws of the Federation of Nigeria 2004.

Endnotes

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Chapter two

Literature Review

This chapter presents the review of existing literature in relation to the study. The review is conducted in order to provide a theoretical basis for the current study and highlight the gap in literature that necessitates the research of this present study. The chapter is presented under the following heading and subheadings;

2.1 Conceptual Review

2.1.1 Motivation to use Artificial Intelligence Technologies

2.1.2 Situation Awareness

2.1.3 Digital Competence

2.2 Theoretical Framework

2.1.1. Motivation to use Artificial Intelligence Technologies

The term motivation denotes the inner or outward influences that drive and propel individuals to take actions, set and achieve desired goals[1]. It is the force that induce, directs, and sustains behaviour and is often influenced by various issues such as personal values, principles, needs, and external rewards or incentives[2]. Etymologically, the term finds its root in the Latin word "movere" which means "to move" or "movement"[3,4]. Motivation is therefore that thing within or without man that cause him to make adjustment to thing around him. In fact, it is that force that causes activity within living organism. In everyday language, motivation is used to explain the reasons behind a person's action[5]. Conceptually, motivation refers to the process that sets in motion, directs, and sustains goal-oriented behaviour in people. It serves as the driving force behind our actions[6]. The concept of involve a blend of

psychological, biological, emotional, social and cognitive factors that triggers behaviour[7]. Motivation triggers certain behaviour in people based on their needs.

The purpose of these explanation is to give a clear meaning of the term which serves as the foundation for the concept under review. Thus, concept of "motivation" is crucial in studying the motive behind human behaviour and decision-making process, thus enabling us know why librarian may be motivated to use AI technologies for their service functions[8]. Motives serve as the fundamental "whys" behind our behaviour, representing the needs or desires that propel and explain our actions. Studies in this area have pointed out that motivation occur in two forms. That is, intrinsic and extrinsic motivation.

Intrinsic motivation arises from within the individual, originating from personal enjoyment, satisfaction, or genuine interest in an activity. It is that internal push, desire, and drive to engage in an activity or behaviour for its own sake, without any external inducement[9]. Intrinsic motivation is sometimes associated with feeling of autonomy or competence. It can lead to increased engagement, creativity and resolve in pursuing goals. For instance, someone might adopt a new application, system or technology purely for the gratification of solving a problem and fun derived from using it. However, extrinsic motivations emanate from external sources, appealing to the individuals. It is those external factors that influence individual to accomplish a particular goal, engage in particular action or behaviour[10]. This kind of motivation may arise due policies from management within an organization, the prestige of being seen to be technological compliant, monetary incentives, social recognition, or praise[11]. These external stimuli prompt people to engage in certain behaviours for the sake of seeking external rewards[12]. Again, the interplay of these diverse motivational factors contributes significantly to shaping human behaviour, and understanding this interplay is essential to understand librarians' motivation to use artificial intelligence technologies.

Motivation to use artificial intelligence technologies in this context refers to the drive or willingness of librarians to accept and use of AI technologies in their personal or professional duties. This motivation can stem from various factor such as recognizing the potential benefits of AI in improving efficiency, enhancing user experiences, and staying relevant in the digital. It can also be motivated by external factors such as library policy. However, popular theory on use and adoption of new technology averred that such drive may depend on the perception of the user[13]. Consequently, if the user perceive that the technology is useful and that it is easy to use, it may serve as motivation to actually use that technology. In that case, if librarian perceive that AI is useful to them and there is less stress in leaning and using it. They might likely be motivated to use AI technologies. The drive to use AI technologies can also be influenced by users' adoption. If users express a strong interest or demand for AI technologies, librarians may be motivated to adopt same. AI technologies is essential for modern library practice because of its unique quality in ensuring speed, efficiency and productivity[14]. Before examining studies on motivation to use AI technologies, there is need to lay a foundation on the nature of AI technology.

The concept of artificial intelligence consists of two closely related sub-concepts: artificial and intelligence. The first sub-concept, artificial, is relatively straightforward to explain. Something is considered artificial when it is not naturally occurring but instead is created by humans or machines[15]. Whether produced by humans or machines, the result of an artificial process is an artifact. Artifacts can take on a multitude of shapes and forms, ranging from personal computers to cars. These objects are products of human ingenuity and technological innovation, designed to serve specific purposes and enhance our lives. The second sub-concept, intelligence, is more complex and advanced. Intelligence refers to the ability to acquire knowledge, apply reasoning, adapt to new situations, and solve problems effectively. Traditionally, intelligence has been associated with living beings, particularly humans and

animals. However, with the advent of artificial intelligence, we now have the ability to create machines and systems that can mimic human-like cognitive abilities. These systems can process huge volumes of data, identify patterns, make decisions, and even learn from their experiences[16]. When combining the notions of artificial and intelligence, we arrive at the concept of artificial intelligence—machines or systems that possess the capability to emulate human-like intelligence and execute tasks that would naturally require human cognitive abilities[17]. The development of artificial intelligence has opened up a world of possibilities across various industries, from automating repetitive tasks to advancing fields like librarianship[18]. As technology continues to progress, the potential for artificial intelligence to revolutionize our lives and shape the future remains boundless[19].

The second sub-concept, intelligence, underscores the fact that AI possesses skills and capabilities that are typically associated with intelligent entities. To gain insight into how intelligence manifests in AI, we shall examine some qualities of an intelligent entity. One fundamental aspect of intelligence is the capacity to learn by acquiring information about the surrounding environment[20]. AI achieves this through learning processes, wherein it gathers knowledge by sensing the environment using external features such as cameras and microphones[21]. Another crucial skill of an intelligent entity is the ability to understand or comprehend acquired data by mining meaningful knowledge from it. Similarly, AI systems are designed to process the collected data and derive valuable insights and patterns, enabling them to comprehend their environment[22].

Additionally, intelligence involves the capability to handle uncertainty even in the absence of prior knowledge. This means that intelligent entities, including AI, can effectively manage complex circumstances where some information is absent or the data is vague. AI systems can utilize the available information, even if it is incomplete, to make rational decisions and

take appropriate actions[23]. For researchers in the field of AI, acting rationally means striving to achieve the best possible results based on predefined performance measures and goals that determine what is right or wrong. This rational approach guides the decision-making process of AI systems, allowing them to optimize their actions according to the desired outcomes. These qualities of intelligent entities help us gain insights into the realm of artificial intelligence. The continuous development and improvement of AI technologies hold immense potential to transform various industries and enhance our daily lives. As AI evolves, its applications across diverse domains, will likely continue to exhibit more sophisticated forms of intelligence, leading to novel and ground breaking discoveries[24].

From the historical point of view, the development of AI began from to the 1940s and 1950s, when computer scientists began exploring the notion of creating machines that could simulate human intelligence[25]. Pioneers like Alan Turing proposed the idea of a universal system that could carry out any task, and other early thinkers, including Warren McCulloch and Walter Pitts, the foundation for neural networks and computational models of brain function. The term "Artificial Intelligence" was officially conceived at a science conference in the year 1956[26]. the conference which was led by John McCarthy, brought together researchers who shared the vision of creating machines with human-like intelligence. This occasion is thought of as the birth of AI as a distinct academic field. During this period, research in artificial intelligence saw significant progress in areas like problem-solving, symbolic reasoning, and game-playing. Initial AI programs, such as the Logic Philosopher and the General Problem Solver, demonstrated the potential of AI to solve complex tasks[27].

Despite early successes, AI research faced challenges in achieving the ambitious goals set during the Dartmouth Conference. The inability of early AI systems to live up to unrealistic expectations led to a period known as the "AI Winter," characterized by reduced funding and a decline in public interest[28]. During this period, research shifted towards expert systems and

knowledge-based AI, which focused on capturing humanoid skill in specific domains. Expert systems found practical applications in fields like medicine, finance, and engineering. However, In the late 1990s and early 2000s, the resurgence of AI was fueled by advances in machine learning algorithms and neural networks. Researchers developed more sophisticated techniques for pattern recognition, natural language processing, and data analysis[29].

The advancements in deep learning led to a revolution in AI application. However, this improvement was hinged on the twin effect of availability of massive volumes of data, and the system computational power to process the data. Deep learning algorithms, particularly convolutional neural networks (CNNs) and recurrent neural networks (RNNs), realized outstanding results in image recognition, speech processing, and linguistic understanding[30]. Today, AI is a pervasive and fast-growing technology, with wide acceptance and usage in various industries, including healthcare, finance, autonomous vehicles, and more. Researchers continue to expand the frontiers of AI, focusing on explainability, ethics, and developing AI systems with human-level reasoning abilities. The development of AI continues to progress, and its impact on society and technology is expected to advance even more in the years to come. As artificial intelligence becomes increasingly intertwined with our everyday activities, it presents both opportunities and challenges, prompting discussions on responsible AI development and deployment.

Leading companies like Google, Yahoo, Amazon, and Bot have harnessed AI to analyze vast quantity of data, utilizing the outcomes to shape how they offer with new products, penetrate new markets, and enhance services. For instance, Amazon and YouTube leverage AI for advertising displays, using algorithms based on previous data to reach customers effectively.[31] Virtual Assistants like Siri, Google Assistant, Google Bard, and Cortana are becoming integral parts of our everyday lives, exemplifying AI's gradual integration into

various aspects of our routines. The potential of AI extends far beyond its current applications, and its continuous progress promises to reshape industries, revolutionize workflows, and enhance the way we live and work. As AI technologies advance further, we can expect even more profound transformations and innovative solutions that will impact nearly every facet of society[32].

The distinction between weak and strong AI raises concerns among researchers and prominent personalities in the technology industry, such as Bill Gates and Elon Musk, who view AI as a potential threat to human civilization and existence[37]. The fear stems from the theoretical possibility of AGI surpassing human intelligence and autonomy, raising ethical questions and prompting discussions about the responsible development and control of AI technologies. It is essential to understand the differences between weak and strong AI and be mindful of the potential risks and benefits that AI advancements may bring. Responsible AI research and governance are crucial to ensure that AI technologies are developed and utilized in ways that align with human values and promote the well-being of society.

It is instructive that with the pervasive use of AI, scholars are divided as to a universal definition. However, some scholars averred that AI is an aspect of computer science that focuses on how computer learn (Machine Language), interpret information, vision: character recognition, picture analysis, 3D perception, modelling of the function of the eye. It also encapsulates speech recognition: speech production, understanding and use of natural language (Natural Language Processing) and expert system which continue to gain more attention[38] .Artificial intelligence is the technology that enables machines to have the abilities to plan, learn, reason, solve problems, move, and to some extent be creative[39] . Similarly, Artificial intelligence is the programming and development of computers to perform human required-intelligence task, such as speech recognition, decision-making, visual perception, language translation, talking and emotional feelings[40]. A group of Nigerian scholars defined

AI as a branch of science which deals with helping machines find solutions to complex problems in a more human like fashion[41]. It is concerned with the study and creation of computer systems that exhibits some form of intelligence: system that learn new concepts and tasks, system that can reason and draw useful conclusions about the world around us, system that can understand natural language or perceive and comprehend visual scene, and system that perform other types of feat that require human types of intelligence[42],[43]. Therefore, AI is a computational technology that seeks to mimic, to different extents, human abilities to perceive their environment, process information, make decisions and to take step to achieve pre-determined goals.

Review of current literature linked the usage of AI with medicine[44] accounting[45] computer science[46]; security[47], telecommunication[48]; education[49]; sustainability[50]. A number of studies reviewed on AI adoption from library perspective suggest that librarian and libraries have implemented various module of AI systems such as natural language processing, expert system, pattern recognition, computer vision, and robotics to perform their role within the library space[51]. The library ecosystem and librarians are known to employ high technology digital tools and systems. The awareness and use of AI and related technologies among librarians in academic institutions have been documented. A study focused on exploring the perceptions of librarians in North America regarding the use of AI and related technologies revealed that librarians have positive perception about AI. This is due to its role is transforming traditional library functions of libraries. In fact, 68% of the participating respondents expressed a keen interest in acquiring training to effectively harness the potential of these advanced technologies. The study also showed that 21% were already using AI and allied technologies[52].

The emergence of AI in libraries promises to bring about transformative changes, enhancing many aspects of library services and operations[53]. Responsibilities that were once labourious and time consuming can now be streamlined and automated through AI-powered solutions. This includes responsibility such as cataloguing, information retrieval, and even personalized reader recommendations. The study's results demonstrate that librarians recognize the significance of keeping abreast with technological advancements to adapt to the evolving needs of library patrons. Their enthusiasm for gaining training highlights their proactive approach to stay relevant in a digitally-driven era, ensuring that they can deliver first-class services and resources to library users. Consequently, the research offers insight to librarians in the implementation of AI to provide repositories during the COVID-19 pandemic[54].

A study on consumer motivation to utilize AI tools for making shopping decisions adopted a theory called the Vroom's expectancy theory[55]. The purpose of the study was to gain insight into the motivation of young consumers to use artificial intelligence (AI) tools such as Chatbots, voice assistants and augmented reality (AR) in their shopping experiences. This was achieved by through the use of the Vroom expectancy theory of motivation. Data for the study were collected by conducting interview with the participant, using theoretical sampling. The data were analysed and coded using the three-step process, i.e., open coding, axial coding and selective coding. The categories identified during coding process were integrated to generate Vroom's expectancy theory of motivation. The findings of the study show that Vroom's expectancy theory of motivation can be used to explain motivation of consumers to use AI tools in making shopping decisions. The study maintains that motivation could emanate from within or outside the individual.

Recent study on user acceptance and use of AI, has shown that acceptance was motivated by the behavioural intention. It was equally shown that extended Technology Acceptance Model (TAM) was commonly used model to explain user adoption of technological innovation.

More importantly, the study revealed that perceived usefulness, perceived expectancy, effort expectancy, trust and attitude had positive influence on willingness to use, use, and behavioural intention across various industries[56]. However, in the past, studies have relied on popular constructs such as perceived usefulness and perceived ease of use as factors that motivate users to use technological innovation[57],[58]. Perceived usefulness is a crucial concept that explains how people perceive and assume the value of using a particular technology to enhance their performance. It examines the notion that when individuals use technology, they view it as valuable and beneficial[59]. The motivation of embracing technological innovation lies in people's perception of their usefulness. Additionally, perceive ease of use plays a significant role in influencing technology use and adoption[60].

Perceived usefulness refers to the subjective belief held by individuals about the extent to which a particular technology will improve their performance or perform their tasks. This belief stems from users' assessment of the technology's potential to offer tangible benefits and meet their specific needs. When a user perceives a technology to be useful, they tend to be more motivated to adopt and embrace it, leading to higher rates of technology usage and user satisfaction[61]. The adoption of technological innovations is primarily driven by people's perception of the benefits they will gain from using the technology. If individuals believe that a technology will significantly enhance their productivity, efficiency, or overall well-being, they are more likely to embrace it[62, 63].

In addition, perceived ease of use is also significant factor that influences user's propensity to adopt a new technology. It refers to the level of simplicity and effortlessness users associate with operating a given technology. It is that individual subjective assessment of how easy or difficult it is to use a product, system, application or system. A technology that is perceived to be easy to learn, understand, and use is more likely to be widely adopted. The ease of use can be assessed through various indicators, such as the frequency and quality of

user interactions with the technology. It is based on user perception of the effort required to understand, learn, and operate the technological innovation. If users can quickly learn and efficiently operate the technology without encountering significant challenges, it indicates a high level of perceived ease of use. Feedback mechanism, usability testing, and user experience research play a crucial role in evaluating and enhancing the ease of use of technological innovations[64]. Individual's perception is key in determining both sub-constructs. Perception is the cognitive process through which individuals gain personal understanding of things, events, and phenomena using their five senses. It involves the recognition, comparison, categorization, and interpretation of objects and experiences that individuals encounter[65]. Some personality traits are thought to influences the human perception. These personality characteristics are conscientiousness, and openness of the person. Both have been found to influence the concepts of perceived usefulness (PU) and perceived ease of use (PEOU)[66]. This background is relevant to developers and users to know the factors that can stimulate the perception towards use, thus motivating users to use technological innovation.

2.1.2 Situation Awareness

Situation awareness (SA) is multidimensional concept applicable to different field and professions[67]. Situation awareness is actually an improvement on the concept of awareness. Generally speaking, awareness, is one of the most used variables within the library and information science (LIS) landscape when investigating factors that influence librarians to adopt and use new technological innovations[68]. However, this variable has been criticised because it usually does not give sufficient description to actually measure actual level of

awareness by respondents[69,70]. What is prevalent in literature is a reference to 'knowing about the existence of something[71]'. In an effort to assess awareness, studies adopt different categorizations such as 'fully aware,' 'fairly aware,' 'not aware,' and so on. Respondents are simply asked to respond with a 'yes' or 'no' to indicate their awareness of any technological innovation. However, this approach might not yield sufficient insights to determine the awareness level of artificial intelligence technologies among librarians.

Thus, this study is anchored on the concept of Situation Awareness (SA). The concept may be broken down into two constituent elements, that is 'situation' and 'awareness.' 'Situation' refers to the combination of circumstances at a particular moment or the state of affairs. On the other hand, 'awareness' is the ability to know the existence of something or an object in a specific environment for utilization[72]. In another context, awareness may be seen as an individual's access to information or knowledge regarding the existence of a particular item, idea, or any other thing[73]. Additionally, it can be described as knowing that something is in existence or the comprehending the state of affairs of subject matter at the present time based on information or experience. From another perspective, awareness encompasses knowledge or perception of a situation, fact, consciousness, recognition, realization, grasp, and acknowledgement concerning a particular situation or development[74].

In another context, awareness can be defined as having the knowledge and understanding of the existence or essence of something[75]. In the case of artificial intelligence technologies, awareness goes beyond merely knowing about their existence. It encompasses the capacity to directly perceive, comprehend, and be cognizant of these technologies, including their purpose and future projections. It is crucial for librarians to have a comprehensive awareness of artificial intelligence, as this technology continues to shape various industries and information management practices. With this understanding, librarians can adapt and

leverage its potential, to enhance their services. The essence of such situational knowledge is to enable the targeted users (Librarians) make active decision to use of them. This implies that if there is no proper situational awareness of AI technologies and its purpose in relation to providing information services, librarians may not be fully aware of its usefulness. Again, they may even use them without knowing. That is why it is possible that many individuals including librarians may relate with AI and yet not know that such technology constitutes AI. Popular in this category are chatbots, often called "virtual assistant" which enhances browsing experience in the digital domain. In other words, situational awareness plays a crucial role in motivating librarians to embrace artificial intelligence technologies. However, to achieve the needed drive requires by librarians to use AI technologies, it will appear that we must go beyond merely informing them about the existence of these tools. It involves providing a comprehensive understanding of the purpose and potential uses of AI in the library context. Informing them of how AI can be harnessed to streamline tasks, improve information discovery, enhance user experience, and provide personalized services, then they can better appreciate its value and be more willing to incorporate it into their daily practices. This deeper understanding helps librarians see AI as a valuable tool that can augment their capabilities rather than as a replacement for traditional methods. Consequently, they become more open to exploring and utilizing AI solutions to meet the evolving needs of library users effectively.

Conceptually, situational awareness can be defined as the understanding or awareness that is obtained through one's own perception or by gathering information. It involves having knowledge of, recognizing and paying attention to the current state or circumstances. It also includes being conscious of, familiar with, and enlightened about any new development or changes. Situation awareness is more than being aware of the current state of events, but

being able to put those events in proper context, so everyone will know what it means and it also involve being able to understand what will happen in the future given the current event.

Situation awareness can be understood as being aware of ones surrounding and having knowledge about various situations. It involves being conscious of what is happening around you and having the ability to determine where to focus your attention for more detailed information[76]. However, Endsley's definition of the concept is widely adopted. Endsley is one the most cited researcher in the field of situation awareness. According to the Researcher, "situation awareness is the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future[77]. The situation awareness model proposed by Endsley was originally developed to ensure the safety of fighter pilots during the First World War. At that time, it was found that it is important for pilots to be aware of all elements that constitute their environment, understand the danger posed or advantages offered by each of the element and predict how each of these elements can affect their safety and ultimately, the achievement of their objectives[78]. Although the theory was first devised in the area of safety, situation awareness has been suggested to directly affect human decision-making and performance in human–machine environments. In fact, the concept of situation awareness has helped to explain various phenomena across domains such as healthcare, manufacturing and other complex environment where lack of awareness can pose danger to an individual and those in their immediate vicinity[79]. The theory has also been applied in areas were using available information and past experience to make decision about the acceptance or rejection of an idea or technology[80]. It is therefore relevant in the context of the use of new technologies as a grounded framework for librarians to make informed decisions about the use of artificial intelligence.

In his proposition, Endsley distinguishes situation awareness as a state of knowledge, from the process individual used to achieve that state. Thus, situation awareness is both a state of knowledge and the various process employed to gain or maintain that awareness.[81] Accurate information is needed to main clear situation awareness. In fact, the emphasis is that information must be relevant and clear. Implying that excessive information may distort or lead to lack of situation awareness. Endsley proposed situation awareness model, considers it in three ascending levels: perception, comprehension and projection. According to the model, perception is the basic level of awareness and projection is the highest level. Careful examinations of these constructs will reveal that they have all been examined. Situational awareness starts with perception of the status, attributes, and dynamics of a particular object, person, idea or technology.

A pilot would perceive elements such as aircraft, mountains, or warning lights along with their relevant characteristics (e.g., colour, size, speed, location). In the same vein, a librarian has to know about the existence of AI technologies and what it can be used for. This level of awareness is often investigated by researchers especially in developing countries such as Nigeria. Researchers examining this level of awareness often ask their respondents to indicate whether they have heard about a new technology to which the respondents are expected to answer 'yes' or 'no' [82]. In some cases, respondents are also asked to indicate the source of their awareness. Simply 'hearing' about AI technologies may not be adequate, the source of the knowledge is also important. Perception is determined by available information, the credibility of the source of information and the manner or channel through which the information is provided. It obvious that providing relevant information about the AI technologies, its uses and functions by librarians and within the library landscape will no doubt encourage or promote positive perceptions in the minds of relevant stakeholders.

However, the perception of AI technologies may also dependent on the eagerness of librarians to embrace and utilize it potential for their service functions. When studies limit their investigation to whether respondent are aware of the existence of a new technology, it may prevent the collection of data showing other aspect of awareness. Previous studies have shown that the usage of AI technologies among librarians in sub-Saharan Africa is low[83, 84]. In other instance, it was found that librarians are skeptical about the new technology because it has the capacity to make librarians redundant. For instance, through the use of ChatGPT, information user may have less need to reference service in the library. These perceptions have implication on the motivation to use AI technologies. Such effort should not be limited at informing but should also be extended to educating and orientating the users about the benefits of such technology. This is expected to arouse the interest of the stakeholders as the mere awareness of its existence is not enough to stimulate widespread use.

As mentioned earlier, the purpose of creating awareness is encouraging librarian to take advantage of these smart technological tools some of which are free. To achieve this, the positive perception formed should lead to comprehension. Comprehension of the situation is based on a synthesis of all the information that influenced the perception. Comprehension builds on the awareness of all the issue relating to AI technologies and extends to the understanding of the importance as well as the purposes of AI technologies in line with librarian's professional and personal goal. Comprehension in the context of the use of AI technologies means that the user is aware of its existence, nature, and areas of operations such as how to acquire, activate and employ them.

Comprehension plays a vital role in the context of AI technologies in libraries. As per the Fourth Law of Library and Information Science, proposed by Ranganathan, which stresses saving the time of the user, AI technologies serve as modern tools that aid quick and efficient

information retrieval. Through leveraging AI systems, librarians can enhance the overall user experience by providing timely access to relevant resources and reducing the time spent on searching and processing information. Comprehension, as a construct of awareness, refers to the ability to make sense of an idea or technology. In the case of AI, it goes beyond merely knowing about its existence. Librarians should strive to fully understand all aspects surrounding AI technologies, including their purpose, capabilities, limitations, and potential applications within the library setting. This deeper understanding empowers librarians to make informed decisions about the integration of AI tools into their services, ensuring they are used effectively to benefit both the library users and the overall information ecosystem.

Understanding the abilities AI technologies in this manner, will help librarians to maximize their potential and harness them as valuable resources to improve information retrieval, expand services, and ultimately provide a better experience for library patrons. Embracing AI with a comprehensive understanding of its implications enables librarians to navigate the rapidly evolving landscape of information management and guarantee that they maintain relevant and effectiveness in meeting the unique needs of the users. Furthermore, the significance of exploring comprehension as a component of awareness is to give users good understanding of AI usage among librarians. There are many issues surrounding most AI systems, for instance, stakeholders from academic and private sector are apprehensive about the use of ChatGPT especially because of its ability to increase the risk of plagiarism. However, due to the issue of lack of regulation and academic integrity, stakeholders are calling for a pause in the development of this AI system until more potential risk are studied and protocol developed[85].

Comprehension, which is the clear understanding of the full essence of the AI technologies derived from the knowledge of its existence and objective is closely linked to projection.

Projection refers to an individual or group's ability to predict the future outcome of an activity[86]. In the context of librarians and AI technologies, it involves librarians' capacity to recognize the potential benefits and potential risks or dangers associated with the use of AI in library services and operations. The concept of projection is not new to library and information science practitioners. However, its measurement and evaluation can be complex and multidimensional. Researchers often examine projection under various factors, including attitudes and perceptions. These factors are essential as they shape how librarians view AI technologies and determine their willingness to embrace and integrate them into their professional practices.

The assessment of librarians' attitudes and perceptions towards AI, enable users, researchers and other stakeholders to understand their level of projection and preparedness to adapt to AI innovations. Similarly, this understanding will help identify any barriers or concerns that might hinder the successful implementation of AI technologies in libraries and allows for targeted strategies to address them. Ultimately, projection plays a crucial role in shaping the future of AI adoption in libraries.

The situation awareness model which was initiated at perception and culminated in projection, is like an input and output process. The input starts at the basic level where the user is introduced to the concept of AI technologies. Perception involves being aware of the existence and application of AI technologies in information service delivery. It forms the foundational level that sets the groundwork for comprehending the full potential and applications of AI in libraries. Comprehension, the second level, builds upon perception, as librarians gain a deeper understanding of AI technologies, including their capabilities, limitations, and potential implications. This understanding empowers librarians to make informed decisions about how to utilize AI effectively to meet the needs of library users. Projection, the third level, is where librarians can combine their perception and

comprehension to make informed projections about the potential benefits and challenges of integrating AI technologies into library services. These projections influence the decision-making process regarding the adoption and implementation of AI technologies in the library. However, this decision, is greatly dependent on the quality of the information available to the individual.

Apart from situation awareness, other factors come into play when deciding whether or not to use AI technologies. This study proposes that one of such factors is the level of digital skills possessed by the librarians. These digital skills, may be conceptualize as digital competence.

2.1.3 Digital Competence

Digital competence is a crucial skillset required for all citizens, including librarians and information professionals, to thrive in the digital age. It enables individuals to effectively and responsibly navigate the digitalized information and knowledge society of today. The European Union recognized the significance of digital competence by identifying it as one of the eight important competencies for lifetime learning[87].

Digital competence can be understood as the combination of several skill set, attitudes, and behaviours that empower individuals to positively and critically engage with digital technologies[88]. It encompasses the capacity to use, understand, and evaluate digital systems, devices, and information effectively. A digitally competent person should be capable of adapting to and leveraging various digital machineries to complete tasks, access information, communicate, and resolve problems in a digital environment. Similarly, digital competence may be defined as the self-confident, attentive and creative use of information communication technology to achieve variety of goals related to work, employability, learning, leisure, inclusion and/or participation in modern society[89]. Digital competence could also be defined as those set of knowledge, skills and attitude that are required when using

ICT and digital media to perform tasks; solve problem, communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly and ethically[90]. In other words, digital competence refers to the set of capability, knowledge, and confident, necessary to effectively use modern computer systems, tools and resources. It may include the capability to use digital devices and software, navigate the cyberspace, communicate through digital platforms, find and evaluate information, create digital content, and use digital technologies to solve problems and accomplish tasks. Digital competence is becoming increasing important in our present world, as technology continues to shape every aspect of life, beginning from work, to education, to socializing and entertainment. It is essential for individuals to develop digital competence to participate fully in society and the economy, and to succeed in various range of professional fields.

AI technologies and digital competence are closely intertwined. AI technologies are core component of digital competence. AI technologies are becoming increasingly important in the digital landscape, as they enable automation, analysis, and decision-making based on vast amounts of data. AI can help individuals and organizations make better decisions, automate routine tasks, and optimize processes. To use AI technologies effectively, individuals must possess a certain level of digital capability. In order words, they should be able to understand how to use AI tools, analyze and interpret the output of these tools, and make informed decisions based on the data they generate. Conversely, AI technologies can also help to improve digital competence. For instance, AI-powered language learning apps can provide personalized feedback and guidance to learners, helping them to develop their language skills more quickly and effectively. AI technologies and digital competence are mutually reinforcing, and both are essential components of a modern digital skillset. As AI technologies continue to develop and become more prevalent, it will become increasingly

important for individuals to develop their digital competence so that they can leverage the full benefits of these technologies.

The importance of such competencies cannot be overemphasized. In fact. Competencies are fundamental tools for defining job positions and descriptions, and in the digital age, digital competencies have become essential for every librarian to achieve their professional goals successfully[91]. In the evolving landscape of information and technology, libraries are increasingly relying on digital tools and platforms to provide efficient and innovative services to their patrons. Librarians must possess digital competencies to keep up with these changes and adapt to the evolving needs of library users. Digital competencies equip librarians with the skills and knowledge necessary to navigate digital resources, manage information effectively, and harness technology to enhance information services. The concept of digital competence is sometimes used synonymously with digital literacy. Over the years, this concept has evolved through different stages, from the concept of computer skills to ICT skills, digital skills to digital competence[92]. It has been opined that the concept of digital skills has more features than digital competence[93]. This position may not be true because digital competence has a broader meaning than any other concept relating to technological skills. Again, digital competence includes other areas such are critical thinking in the use of new technologies and media, safe and responsible use, risk awareness, and ethical and legal considerations.

In view of the above, being digitally literate suggests that the individual has abilities such as, understanding media, searching for information, being critical of what is retrieved and communication with others using a variety of digital technologies. A major aspect of digital transformation is the development of artificial intelligence technologies to improve human and organization output. Improvement in science and technology has impacted on the

functionalities of librarians and the library ecosystem. Thus, library Professionals are expected to upgrade their skills and competency to succeed in the digital age and to fully participate in the opportunities and challenges of a rapidly changing world.

Digital competences as described by the European Union digital competence framework (known as the DIGCOMP framework) consist of 21 competencies grouped under six constructs. The specific constructs included in this framework are: information and data literacy, communication and collaboration, digital content creation, safety, problem solving and digital citizenship. These constructs are often interrelated, and a comprehensive digital competence framework will address each of them in some way. However, in this study only five will be considered because of their relevance to the study. The construct of digital citizenship will be excluded.

Digital literacy, refers to the ability to read, understand, and use digital information effectively. It includes skills such as information search, evaluation, and information management. While digital skills are those practical abilities that enable individuals to use digital tools and technologies proficiently. This may include proficiency in using computers, software applications, online collaboration tools, and communication platforms. Digital competence also involves the capacity to think critically and evaluate information found online. It includes understanding the credibility of sources, recognizing biases, and making informed judgments. Furthermore, Digital communication is that aspect which involves effective communication through digital channels, such as email, social media, and messaging apps. Understanding the digital competence of librarians in the context of using AI technologies is essential to identify potential gaps and areas for improvement.

In order to better understand the level of digital literacy among academic librarians and how it affects their willingness to adopt new technologies, a study was conducted in Jordan[94]. The

outcome demonstrates that managing the infrastructure and services of an electronic library requires the use of digital skills. In order to gather the necessary information from Jordanian university libraries, a questionnaire was created. The findings show that librarians have a high level of digital proficiency. The outcome also demonstrates that for librarians, acquiring the necessary skills is most difficult due to financial concerns. Most significantly, the level of digital proficiency has a beneficial impact on Jordanian academic librarians' embrace of and use of technology. It was found that the results were unaffected by criteria including sex, age, experience, specialty, and library type. The results of this study will aid in examining the competences and skills required by information workers and serve as a benchmark for updating the curricula in worldwide schools of librarianship and information science.

A study was carried out in academic libraries in English-speaking nations in Africa[95]. Two hundred and fourteen (214) librarians participated in the study. The study's goal was to evaluate the level of digital literacy possessed by librarians and information specialists employed in African university libraries. On one hand, moderate and low ratings were given for the development of metadata and library websites, respectively. Overall, the librarians assessed their level of digital literacy skills as moderate, and disparities in digital literacy skills were found between librarians in Nigeria and South Africa.

2.2 Theoretical Framework

Theoretical framework is an interconnected set of constructs and propositions that provide a systematic picture of phenomena by defining relationships between variables and outlining what has been done and said about a subject. It is often considered as a structure that directs research by relying on a formal theory, constructed by using a conventional, coherent description of certain phenomena and their relationships. Thus, a theoretical framework for a research project provides structure and parameters for the researcher to work within. It serves

as the focal point for reviewing and debating literature. It aids in the development of research questions, the design of the study, the foreseeing of results, and the design of interventions[96].

2.2.1 Stimulus Theoretical Framework

The stimulus theoretical framework proposed by P.C. Lai represents an expansion of the Technology Acceptance Model (TAM) of 1996. This expanded framework includes additional factors such as security, use, and the mediator, aiming to understand consumers' intention to use a specific technological innovation, in this case, the single platform E-payment System[97]. The components of the framework can be described as having a stimulus which represents the external factors that influence users' perceptions and intentions to use the E-payment System. In this context, the design and security of the system are crucial stimuli. The design refers to the user interface, features, and capabilities of the system, while security involves the measures taken to protect users' data and transactions. Perceived usefulness (PU) is one of the organisms in the framework and represents the user's perception of how the E-payment System can enhance their performance or make their tasks easier and more efficient. Perceived ease of use (PEOU) is another organism in the framework and reflects the user's perception of how user-friendly and effortless it is to use the E-payment System[98].

The mediator is a key element that influences the relationship between the stimulus (design and security) and the organisms (PU and PEOU). It acts as an intermediary factor that helps explain how the stimulus affects the users' motivation to use the system. The empirical results from the quantitative analysis of the study confirmed that the design and security of the single platform E-payment System played a crucial role in stimulating the perceived usefulness and perceived ease of use among users. These two factors, in turn, acted as significant motivators that influenced users to adopt and utilize the E-payment System. In summary, the stimulus

theoretical framework provides valuable insights into the factors that influence consumers' intention to use technological innovations like the single platform E-payment System.

In the context of the present study, the framework can be applied thus. The stimulus in this case refers to the features, capabilities, and purpose of AI technologies. These characteristics represent the external factors that influence librarians' perceptions and attitudes towards AI. Meanwhile, perceived usefulness, one of the organisms in the framework, represents the librarian's perception of how AI technologies can enhance their performance, improve information services, and automate various library processes. In addition, perceived ease of use, which is another organism in the framework, reflects the librarian's perception of how user-friendly and accessible AI technologies are in their daily work routines.

The mediator in this context acts as an intermediary factor that explains how the features, capabilities, and purpose of AI technologies (stimulus) influence librarians' perception of the ease of use and usefulness of AI (PEOU and PU). It helps understand the relationship between the stimulus and organisms in driving librarian's motivation to embrace and use AI technologies. Applying this framework to the study, we can expect that if AI technologies possess user-friendly features, relevant capabilities that align with the needs of librarians, and clear purposes that enhance information services, then librarians are more likely to perceive AI as useful and easy to use. These perceptions of usefulness and ease of use will, in turn, motivate librarians to embrace and integrate AI technologies into their daily practices.

The understanding of how the stimulus of AI technologies affects librarians' attitudes and motivation to adopt AI, can also help stakeholders promoting and perhaps design AI solutions that resonate with librarians' needs, facilitate smoother integration, and foster a positive impact on library services and user experiences. The framework offers a structured approach

to analysing and comprehending the factors that motivate AI adoption in the library setting and can be a valuable tool for guiding decision-making and implementation strategies.

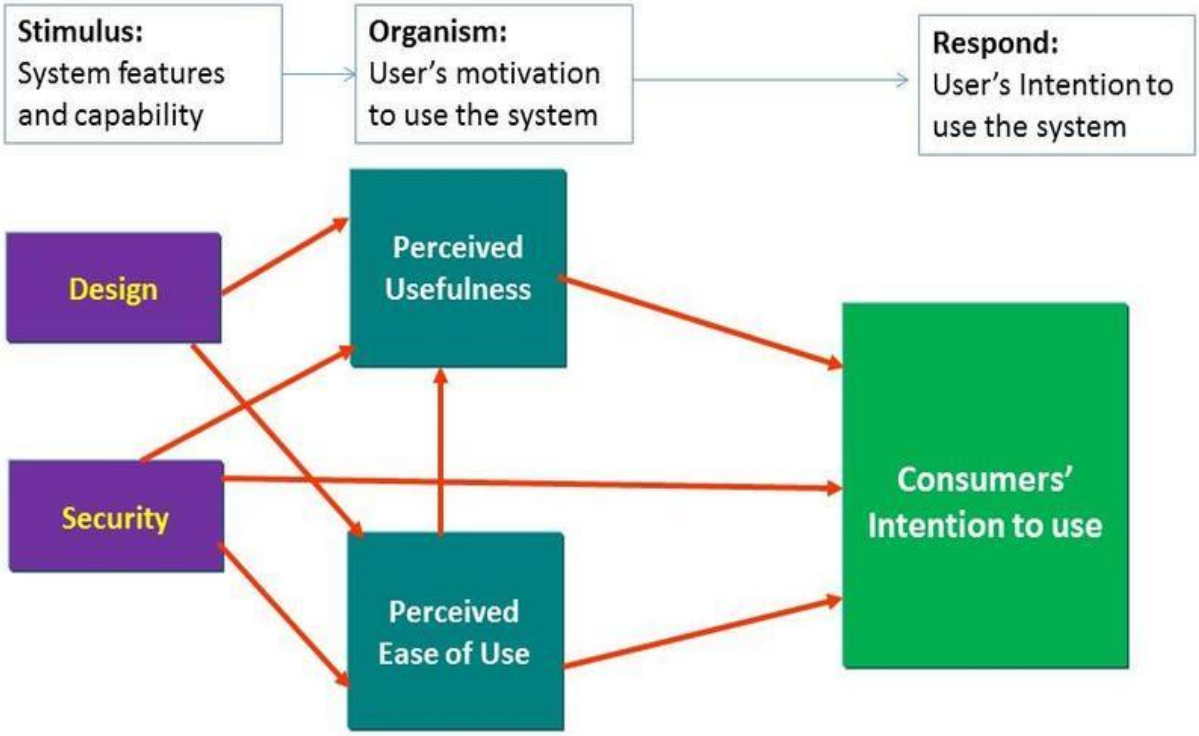

Fig 2.1. Stimulus Theoretical Framework (Design and Security Stimulus Research Model)

Source: P.C Lai 2016

2.2.2 The Situational Awareness Theory (SAT)

The Situational awareness theory was propounded by Mica R. Endsley in 1995[99]. The theory as postulated by Mica Endsley, has become a cornerstone in understanding human performance and decision-making in complex environments. This theory provides a comprehensive framework for examining the cognitive processes involved in situational

awareness, which encompasses the perception, comprehension, and projection of elements within a given context[100].

The situational awareness theory provides a formal definition of situation awareness as the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future[101]. This definition suggests that situational awareness occurs in three stages: perception, comprehension, and projection. At the perception stage, librarians become aware of the existence of AI technologies. This involves recognizing the presence and availability of AI tools and solutions in the context of library services and operations. In the comprehension stage, librarians move beyond mere awareness and seek to understand the purpose and potential of AI technologies, particularly in relation to their professional and personal goals. They analyse how AI can be integrated into their workflows and how it can enhance their work performance within the library ecosystem. The projection stage involves librarians identifying specific benefits and challenges associated with using AI technologies. They can anticipate how AI will impact their work and the library environment in the near future, helping them make informed decisions about AI adoption and integration.

In progressing through these stages of situational awareness, librarians can develop a comprehensive understanding of AI technologies and their potential applications in the library context. This enhanced awareness empowers librarians to leverage AI effectively, identify opportunities for improvement, and address challenges that may arise during implementation. Ultimately, situational awareness is a valuable framework for librarians to navigate the integration of AI technologies successfully and ensure that these technologies align with their professional goals and enhance their ability to serve library users.

The formal definition of situational awareness highlights its three key components: perception, comprehension, and projection. Perception refers to the recognition and acknowledgment of relevant elements and factors present in the surrounding environment[102]. In the context of librarians' awareness of AI technologies, this stage corresponds to their ability to recognize the existence of AI technologies within their professional sphere. Comprehension entails the understanding of the significance and implications of the perceived elements in relation to one's goals and objectives. For librarians, comprehending AI technologies involves grasping their purposes and potentials through integration into the library ecosystem, aligning their usage with their professional and personal aspirations. Projection, the third stage of situational awareness, involves the anticipation and prediction of the future status and developments of the recognized elements. Librarians' ability to project the benefits and challenges associated with AI technologies within the library environment is crucial for informed decision-making and effective implementation.

Therefore, librarians' situational awareness of AI technologies is contingent upon their ability to perceive the presence of AI, comprehend its purpose and potential integration, and project its effects on their work performance and the library ecosystem as a whole. This heightened awareness enables librarians to make well-informed judgments regarding the adoption and utilization of AI technologies in their professional practice, potentially leading to improved service delivery and overall efficiency within the library setting. The theory of Situation Awareness further posits that the various levels of awareness are interconnected, implying that an individual's perception, comprehension, and projection of elements within their environment are interdependent and influence each other.

To assess and quantify situation awareness, several techniques have been developed, one of which is the Situational Awareness Rating Technique (SART). SART relies on individuals' subjective opinions and involves the use of three 7-point Likert scales to measure their level

of situation awareness. These scales are designed to gauge the degree to which a person perceives: (i) the demand on their attentional resources (D), (ii) the availability of their attentional resources (A), and (iii) their understanding of the situation they are confronted with (U). The perceived demand on attentional resources (D) is contingent on factors such as the stability, complexity, or variability of the current situation. The availability of attentional resources (A) is influenced by the individual's level of alertness, concentration, and spare mental capacity. Finally, the understanding of the situation (U) is impacted by the quantity and quality of available information and the person's familiarity with the context[103]. The utilization of SART methodology, researchers and practitioners can gain insights into an individual's cognitive processes and their situational awareness in complex and dynamic environments. Such assessments are valuable for evaluating performance, making informed decisions, and designing interventions to enhance situational awareness in various domains, including aviation, military operations, healthcare, and other high-stakes settings.

The theory of Situational Awareness (SAT) emphasizes that situational awareness is derived from information obtained from diverse sources. These sources can differ significantly among individuals and may even vary over time for the same person. Therefore, situational awareness is a dynamic and context-dependent process, shaped by the unique combination of information available to each individual in a given situation. The theory further highlights that efforts to create awareness alone are not adequate to ensure widespread situational awareness. Merely having information present in a report or displayed somewhere, or possessed by a team member, does not automatically translate to situational awareness. True situational awareness only emerges when the individual who needs the information to make decisions actively acquires and comprehends that information. In other words, situational awareness is not a passive state, but an active process that involves the individual's cognitive engagement with relevant information. It is the responsibility of the decision maker to seek

out, process, and understand the pertinent information in order to develop a meaningful awareness of the situation. This understanding is crucial, especially in complex and time-sensitive environments, such as aviation, military operations, or emergency response scenarios, where accurate and timely situational awareness can be critical for effective decision-making and task performance. Thus, the theory of situational awareness underscores the importance of actively acquiring and comprehending relevant information for individuals to attain a genuine and reliable awareness of the situation at hand. It highlights the dynamic and multifaceted nature of situational awareness and cautions against assuming that information availability alone guarantees its existence.

In the context of the present study, perception relates to the librarians' knowledge and awareness of the existence of AI technologies. This awareness is fostered through various channels, such as social media, blog posts, seminars, conferences, workshops, research articles, and newspaper columns, among others. These information dissemination avenues play a crucial role in creating awareness among librarians about the presence and significance of AI technologies in their professional domain. Comprehension, on the other hand, involves the librarians' ability to effectively interact with AI technologies, including software and programs, and their capacity to comprehend the features and underlying policies governing these technologies. This aspect of awareness delves into the librarians' practical understanding and proficiency in utilizing AI tools and systems in their daily work activities. Lastly, projection encompasses the librarians' ability to envision and comprehend the potential benefits that can be derived from the future use of AI technologies. It involves understanding the possibilities and opportunities that AI innovations can offer to enhance library services and improve overall performance.

The situational awareness theory is particularly relevant to the current study as it provides a comprehensive framework for examining the librarians' level of awareness concerning the

use of AI innovations. By considering the theory's three dimensions of perception, comprehension, and projection, researchers can holistically assess the librarians' overall awareness and readiness to adopt and integrate AI technologies into their professional practices.

Despite the criticisms leveled against situational awareness theory about its validity and usefulness,[104 105,] .It has been widely validated and applied in various studies, including those exploring artificial intelligence (AI)[106,107]. This indicates its practical significance and effectiveness as a theoretical foundation for understanding human cognition and decision-making, especially in complex and technology-driven domains like AI. Generally, employing the situational awareness theory in this study enables a structured and systematic analysis of the librarians' awareness levels, shedding light on their preparedness to embrace AI innovations in the library ecosystem.

2.2.3 DIGCOM Framework

The Digital Competence Framework, commonly referred to as DigComp, was initially introduced in 2013 by the European Commission[108.] The framework focuses on the development of digital skills and competencies in individual. It aims to provide a structured approached to acquiring and improving skills in diverse areas. Additionally, DigComp aimed to assist policy-makers in formulating effective policies to foster digital competence development and to facilitate the planning of tailored education and training initiatives for specific target groups. The framework helps individual to assess their current digital skills, set goals for improvement, and track their progress. It is designed to be adaptable in various contexts and can be used by librarians[109].

Digital Competence Framework (DigComp) served as a unifying platform by providing a shared vocabulary to identify and articulate the fundamental dimensions of digital

competence, thus establishing a consistent reference across Europe. Since its inception in 2013, DigComp has found widespread application in diverse domains, notably in employment, education, training, and lifelong learning initiatives[110]. However, given the rapid pace of digitalization in various spheres of society, new demands have emerged, prompting the evolution of DigComp to its latest iteration, Digital Competence 2.2 framework. The uniqueness of the updated version is its comprehensive approach to digital skills development. It covers wide areas of competencies including information management, communication content creation, problem solving, and digital safety. This holistic approach ensures that individuals develop a well-rounded set of digital skills that are essential in today digital landscspe[111]. The Framework, is adaptable and can be customize to suit different context and need. Thus, it is suitable for assessing librarians' competence in the use AI technologies.

The Digital Competence Framework (DigComp) plays a pivotal role in establishing a shared comprehension of digital competence. It is widely acknowledged as the assured, discerning, and conscientious use of digital technologies for learning, work, and active participation in society. This multifaceted competence includes a blend of knowledge, skills, and attitudes. As represented in Figure 2.2, DigComp delineates the primary components of digital competence, spanning across five key areas and encompassing 21 specific competences. Moreover, the framework outlines eight distinct proficiency levels, accompanied by illustrative examples of knowledge, skills, and attitudes, along with practical use cases relevant to both educational and occupational settings. Through these comprehensive provisions, DigComp serves as a valuable reference for enhancing individuals' digital prowess and fostering their effective participation in the digital realm.

The 2.2 version, represents the fourth iteration of the Digital Competence Framework, having been initially released in 2013. The ongoing updates to Dig Comp reflect the dynamic and evolving nature of digital competence, recognizing the continuous advancements in digital

technologies. In its latest form, DigComp 2.2 incorporates over 250 new examples of knowledge, skills, and attitudes. These examples are carefully curated to empower stakeholders in confidently, critically, and responsibly engaging with digital technologies, including the rapidly emerging ones, such as those powered by artificial intelligence (AI).[112]Notably, this updated version of DigComp also addresses the essential skills required for effectively interacting with AI systems.

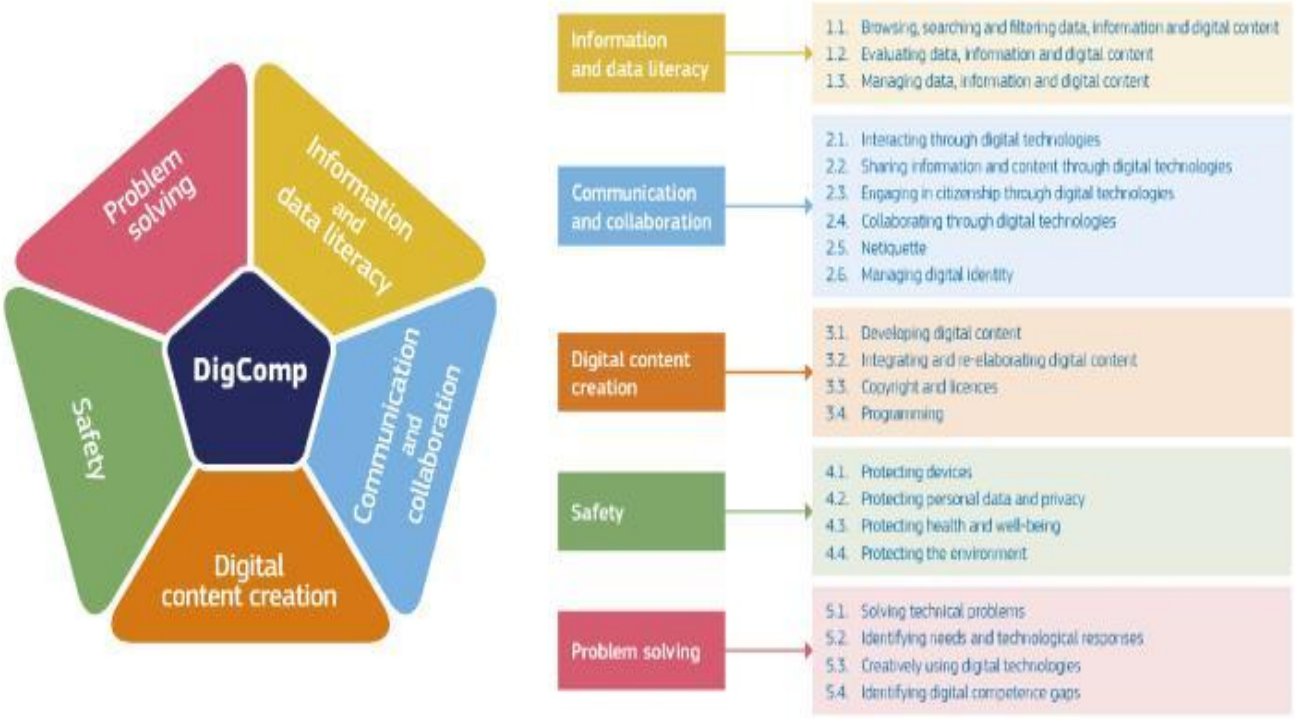

Figure 2.2: Digital Competence 2.2 Framework

Source: European Union, 2022

The Digital Competence Framework 2.2 is important to the our discuss because, it addresses the skill required for interacting with AI technologies. Firstly, it emphasised information management skills, which are relevant for effectively accessing, evaluating, and using AI generated information. Secondly, the framework emphasised communication skills. This

includes ability to effectively communicate with AI systems and understand their responses. Also, the framework, highlights problem solving skills, which are essential for identifying and addressing challenges that may arise with interacting with AI system. Finally, the framework also emphasised online safety, including the ability to understand and mitigate potential risks associated with AI system.

The DigComp 2.2 framework update significantly emphasizes the inclusion of illustrative examples, showcasing the knowledge, skills, and attitudes relevant to each of the 21 competences. For each competence, the update presents 10-15 statements, offering timely and up-to-date instances that highlight contemporary themes. In total, the update introduces more than 250 examples, highlighting novel and emerging topics that have emerged since the previous version.

Some of the notable themes covered by these examples include: misinformation and disinformation in social media and news sites, encompassing fact-checking practices and assessing the credibility of information sources, addressing concerns related to fake news and deep fakes, and promoting information and media literacy. The trend of datafication of internet services and apps, with a focus on understanding how personal data is utilized and exploited in digital platforms. Citizens' interactions with AI systems, encompassing data-related skills, data protection, privacy considerations, and ethical aspects surrounding AI applications[113].Emerging technologies such as the Internet of Things (IoT), exploring the integration and implications of interconnected devices and systems[114]. Environmental sustainability concerns related to resources consumed by information and communication technologies (ICT), addressing the environmental impact of digital technologies. In highlighting these contemporary themes, DigComp 2.2 empowers educators and stakeholders to foster digital competence in alignment with current societal challenges and opportunities,

ensuring that individuals are well-equipped to navigate the evolving digital landscape responsibly and effectively.

2.3 Review of Empirical Studies

2.3.1 Situation Awareness and Motivation to use Artificial Intelligence Technologies

Awareness plays a pivotal role in the successful adoption of any new technological innovation, and this holds true for AI technologies as well[115]. However, when it comes to AI, many individuals, including librarians, still possess limited knowledge about the various categories and types of AI technologies available. This lack of understanding often leads them to overlook AI as a valuable tool for enhancing information service functions. Recognizing the importance of addressing this issue, researchers have conducted studies to understand how individual perceive and interact with AI technologies, as well as their motivation for using them. However, based on extant literature, there is scanty research in this area, that combines both variables.

A study explored the level of artificial intelligence (AI) awareness among library leaders, practitioners, and scientists in Indonesian academic libraries.[116] The study aimed to shed light on the potential benefits of AI implementation, as well as the necessary infrastructure and challenges associated with it. The researchers utilized a purposive sampling technique and conducted thematic analysis on data collected from 38 participants. Eight main themes emerged from the analysis, covering aspects such as understanding of AI, AI adoption, benefits, competencies required, facilities, supporting factors, inhibiting factors, and expectations of AI.

The study's findings indicated that diverse viewpoints contributed to a comprehensive awareness among library stakeholders, providing insights to initiate AI initiatives in Indonesian libraries. Participants, including leaders, practitioners, and scientists,

demonstrated a positive, open, and encouraging perspective on AI. However, it is essential to note that the study did not investigate variations in perspectives among the participants; rather, it focused on their overall understanding of AI and its implications, particularly in the context of the concept of an intelligent library.

It is worth mentioning that the research sample exclusively consisted of participants from academic libraries in Indonesia. Consequently, when considering these findings, libraries should take into account the implications for AI implementation, specifically regarding technological and facility requirements, the competence of librarians concerning AI, and the leadership roles crucial for successful AI projects. This study contributes to the existing body of knowledge by addressing the research gap concerning university libraries' readiness and awareness to adopt AI, particularly in developing countries.

In Nigeria, the awareness and readiness for Artificial Intelligence (AI) among polytechnic students were investigated in a study.[117] The research encompassed five carefully selected polytechnics, with a study population consisting of three hundred and twenty (320) final year students who were registered members of the respective polytechnic libraries. To gather data, a well-designed questionnaire was employed, and one hundred (100) respondents were purposively sampled from each polytechnic. The study findings shed light on the students' awareness of the utilization of AI in library operations, with a notable source of awareness being the library orientation programs. Additionally, the students acknowledged the necessity of possessing fundamental computer skills to remain relevant in this technological era. However, the investigation also highlighted a significant anticipated hindrance to AI implementation, which was the challenge of unstable power supply.

In light of the findings, the study makes essential recommendations for polytechnic library managements. These recommendations include the adoption of alternative sources of power

supply to mitigate the effects of unstable electricity, ensuring uninterrupted AI implementation. Furthermore, the study emphasized the incorporation of practical ICT training into the curriculum, aiming to equip students with the necessary skills to engage with and embrace AI technologies effectively. The study's outcomes present insights into the level of AI awareness and preparedness among Nigerian polytechnic students. In addressing the critical challenges and emphasizing the significance of technological proficiency, polytechnic libraries can proactively embrace AI's potential and enhance their information services, thereby better meeting the evolving needs of the academic community.

In a related study, the perspectives of librarians regarding the awareness and preparedness of academic libraries in Nigeria to embrace artificial intelligence (AI) for library operations and services were investigated[118]. The research included six libraries, chosen from the six geopolitical zones in Nigeria. Data collection was conducted using an open-ended questionnaire, distributed to the respondents via mail. Thematic analysis was employed to analyze the collected data. The study's findings demonstrate that Nigerian academic libraries are cognizant of the integration of AI systems in libraries, observing its global adoption and usage in many academic institutions. However, within the Nigerian context, the integration of AI is not as prevalent. The librarians' perspectives on the readiness of academic libraries to adopt AI systems were varied and nuanced.

According to the librarians' perceptions, the integration of AI in library operations and services holds the potential to elevate libraries to new heights by minimizing human errors resulting from repetitive tasks. However, there were concerns that AI systems might eventually replace certain job roles if not implemented thoughtfully. The study identified several challenges that academic libraries in Nigeria may encounter in the process of adopting AI. These challenges include funding constraints, a scarcity of experts in the field, limited power supply, budgetary limitations for procuring the necessary technology, and a

shortage of trained personnel responsible for system maintenance. To address these challenges, the study makes key recommendations. First and foremost, there is a need for adequate funding to enable libraries to acquire AI and other information and communication technology infrastructure. Additionally, it is essential to recruit librarians possessing the relevant skills required to effectively work with AI technology. The study's insights shed light on the current state of AI integration in Nigerian academic libraries from the perspective of librarians.

A study conducted in Pakistan aimed to assess and explore the potential application of Artificial Intelligence (AI) tools in academic libraries within the country[119]. Specifically, the study focused on areas of library technical and user services where AI could be applied in the near future. A qualitative approach was employed, and interviews were conducted with 10 chief librarians/library heads, with representation from both the public and private sectors in universities. These interviews sought the views of these professionals on the adoption of AI tools in Pakistani academic libraries.

The findings revealed that librarians in Pakistan are aware of AI technologies and are already utilizing some services based on Natural Language Processing (NLP), such as Google Assistant, Voice Searching, and Google Translate. Additionally, pattern recognition methods, like text data mining, are being used to retrieve library materials and conduct online searches. Librarians are accessing big data through services such as cloud computing, One Drive, and Google Drive. However, the study also highlighted a low level of awareness of robotics and chatbots among the surveyed librarians.

In response to the increasing prevalence of artificial intelligence (AI) in developed countries, a study was conducted to investigate the awareness and perception of AI in the management of university libraries in Nigeria[120]. The study employed both qualitative and quantitative

survey design. The population consisted of eighty academic librarians from eight purposively selected university libraries across the country. The study's findings revealed that academic librarians are well aware of the utilization of AI in university libraries. However, they expressed concerns about potential job losses as a major hindrance to adopting these technologies, despite recognizing the benefits of innovative technologies in enhancing user satisfaction.

Based on the study's results, recommendations were made to address these concerns and to ensure academic librarians' relevance in the era of the fourth industrial revolution. It is crucial for librarians to acquire the necessary skills aligned with these technologies, enabling them to actively contribute to and benefit from the integration of AI in library services. Additionally, library management should play a significant role in educating academic librarians about AI's implementation, emphasizing that its adoption does not necessarily lead to job losses.

2.3.2 Digital Competence and Motivation to use Artificial Intelligence Technologies

According to a survey of 3,000 executives conducted by two researchers, one of the major barriers that establishments encounter when implementing AI projects is the lack of AI skills within their workforce[121]. A skilled and competent workforce is essential for successful AI implementation and seamless interaction with AI in day-to-day business operations[122]. Currently, AI systems excel in a narrow field of applications, often referred to as 'weak AI,' where they surpass human capabilities. As long as this remains the case, human involvement is crucial to remain in the loop[123]. This underscores the need for competency profiles in various professions to adapt and acquire the necessary competencies for effectively dealing with AI and addressing modern Information Systems (IS) development challenges.

The literature on AI frequently refers to workforce competency requirements using phrase such as 'digital skills' or as a combination of data, technology, and business knowledge[124].

There is a consensus in the literature that AI will significantly impact the way work is conducted, influencing the required competencies in the labour market[125]. Despite the crucial role of employees' AI proficiency in driving AI adoption, the focus on these competencies remains inadequate[126]. It is imperative to recognize and address the importance of developing and nurturing AI-related competencies within the workforce to ensure successful integration and utilization of AI technologies across various sectors and industries[127].

The study titled rebooting employees: up skilling for artificial intelligence in multinational corporations" explores the transformative impact of AI on businesses and the consequent need for up skilling employees (120).[128] the study highlighted the significance of fostering a learning culture within organizations. It also stressed the need to look into the challenges arising from AI adoption. To address the research question, the study conducted interviews with 20 seasoned MNC executives in India's IT sector. These participants held middle to senior-level managerial positions with a minimum of 10 years of work experience and substantial exposure to AI implementation and AI-enabled services.

The findings of the study indicate that data analysis and digital skills emerge as critical technological competencies for employee upskilling. Additionally, complex cognitive skills, decision making, and continuous learning are identified as essential cognitive competencies for upskilling employees. Leadership, interpersonal skills, and communication are recognized as timeless skills, requiring relatively lower degrees of upskilling compared to technological and cognitive skills. Moreover, routine skills such as basic statistics and project management are projected to diminish in importance in the future, rendering upskilling in these areas unnecessary. In conclusion, the study accentuates the importance of specific competencies for effective AI engagement, highlighting the skills that employees need to develop to navigate the AI-driven landscape successfully.

While AI domain experts continuously develop and train machine-learning algorithms to emulate human capabilities, certain high-level skills, such as communication, relationship building, problem-solving, reasoning, empathy, and sense-making, remain challenging to be replicated by AI[128]. Thus, in the era of AI, employees must deconstruct existing skills and cultivate new ones to remain employable and competitive. In conclusion, this study highlights the importance of identifying and developing critical skills for upskilling employees to effectively navigate the challenges and opportunities presented by the era of AI. By honing the right set of competencies, staffs can remain relevant and resilient in the rapidly evolving landscape driven by AI technologies.

However, a recent study investigated the influence of technology readiness, digital competence, perceived usefulness, and ease of use on accounting students' adoption of artificial intelligence technology[129]. The findings reveal that perceived ease of use and usefulness significantly impact artificial intelligence technology adoption among accounting students. However, digital competence and technology readiness do not exhibit a notable effect on AI technology adoption. It should be mentioned that it was situated among professional in the accounting field.

2.3.3. Influence of Situation Awareness and Digital Competence on Motivation to use Artificial Intelligence Technologies

It is essential to understand the specific variables that influence the use or non-use of artificial intelligence technologies. Scholars have acknowledged that a combination of interrelated factors often play a significant role in motivating librarians toward the use of AI technologies. For instance, lack of awareness about AI technology, may affect its adoption[130]. Perceived usefulness, and perceived ease of use can equally have significant influence on the use of artificial intelligence technologies[131]. It has been shown that there is a relationship between

digital competence and technological adoption. That is, individuals with high level of digital competence tend to engage more with technology[132]. However, a study within the education domain found an insignificant relationship between digital competence and technology adoption.[133] This was corroborated with a study that combined four variables of technology readiness, digital competence, perceived usefulness and ease of use on artificial intelligence adoption. This study shows a positive relationship between perceived usefulness and perceive ease of use on AI adoption. However, it was found that digital competence and technology readiness do not exhibit a significant effect on AI technology adoption[134]. Furthermore, it was revealed that most of the respondents perceived themselves to possess intermediate to advanced levels of digital competence. However, having a high level of digital competence does not necessarily translate to strong inclination to use artificial intelligence technologies. Rather, it indicates that the respondents would adapt AI technology effectively, but it does not guarantee their motivation to use it. It should be mentioned that none of the studies stated above was conducted within the library landscape.

In a comparative study investigating the influence of digital and information literacy skill on intention to use digital technologies[135]. The study which was conducted among young adult in Korea and Finland, examined the disparities in information and communication technology usage. The finding revealed that information literacy had a direct and positive impact on the intention to use technologies. A higher level of information literacy was associated with a stronger intention to use digital technologies. The study also explored the relationship between digital literacy and intention to use technologies. It was observed that the effect of digital literacy on intention to use technologies was fully mediated through the habit and performance expectancy.

2.4 Conceptual Model

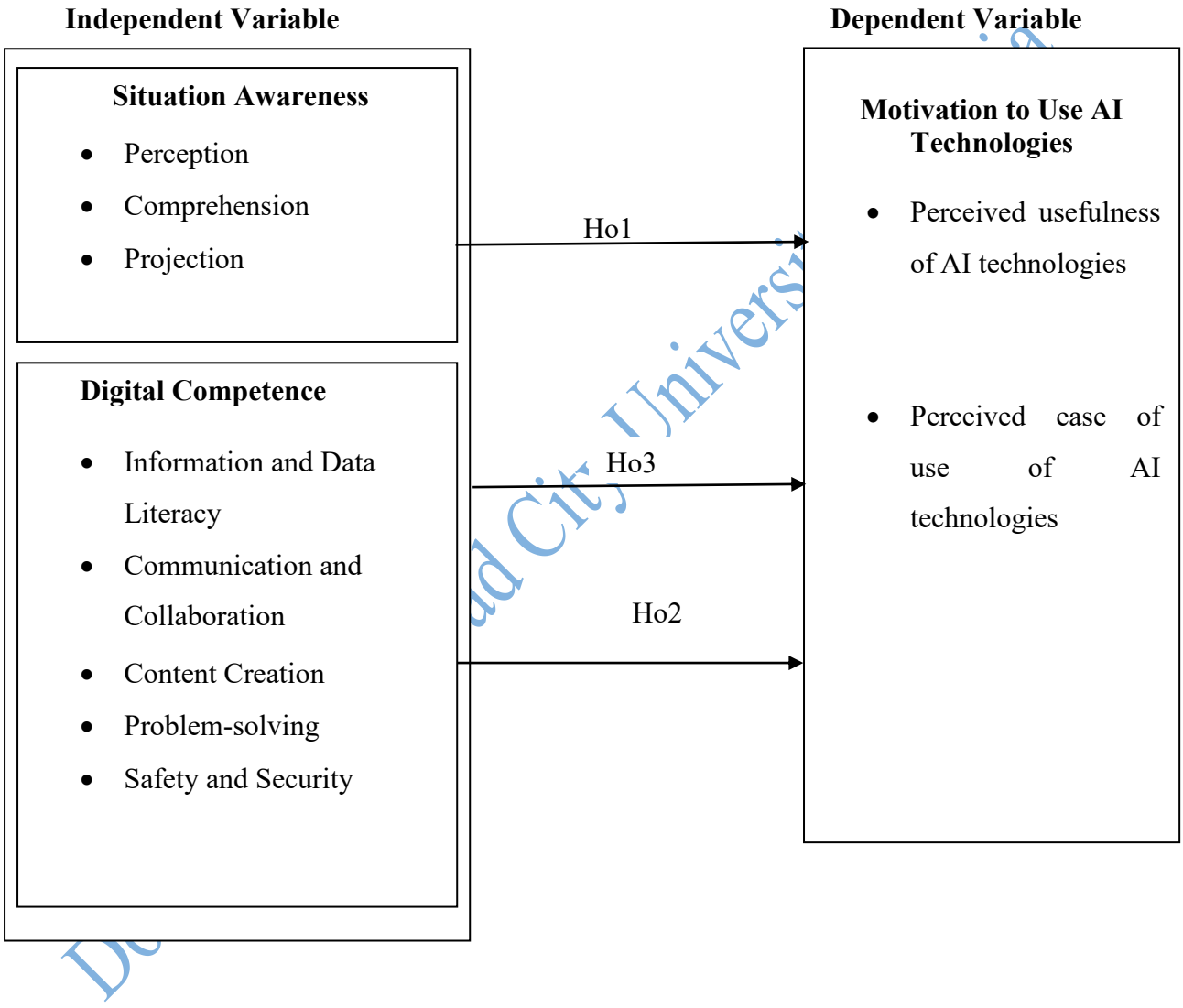

Figure 2.4: Conceptual model for the influence of situation awareness and digital competence on the motivation to use AI technologies among librarians in Edo and Delta States.

Source: Researcher, 2023

The conceptual model shows the premises on which the study is based and the interrelationship between the study variables. As shown in the model, motivation to use AI technologies might be influenced by either or both of situation awareness (Awareness) and digital competence. Motivation to use AI technologies is measured by perceived usefulness and perceived ease of use. The two measures were adopted from the stimulus response theory[136] and the purpose of use which is related to the different features AI technologies/tools were derived from literature

Awareness is an inspiring factor that influence the use of new technological innovation. Awareness is measured using perception, comprehension and projection[137]. Apart from awareness other factors such as digital competence may also serve as a motivating factor for using AI technologies. Generally speaking, digital competences are those set of knowledge, skills and attitude that are required when using ICT and digital media to perform tasks; solve problem, communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexible, ethically, reflectively for work, leisure, participation, learning, socializing, consuming and empowerment. In other words, digital competence refers to the set of skills, knowledge, and attitudes, required to effectively use digital technologies, tools and resources. Among the numerous digital competence skills, the component being considered in this study, are information and data literacy communication and collaboration digital content creation, digital safety and security and digital problem-solving. In the context of this study, all the factors will be measured to understand their significance as stimulus for AI technologies usage among librarians.

2.5 Summary of Reviewed Literature

Literature review has provided an insight into the origin and development of AI technology. It is clear from literature that AI is one of the emerging technologies that have intelligently automated library services. The term artificial intelligent was first used 1956 during the Dartmouth conference, where researchers gathered to explore the possibilities of creating machines that could simulate human intelligence. The early years focused on symbolic AI, which used rules and logical representations to solve problems. Despite early optimism, progress in AI research faced significant challenges, leading to what is known as the "AI winter". High expectations were not met, and research in AI experienced a decline. Symbolic AI, which struggled with complex real-world problems was a major factor contributing to AI winter. Interest in AI resurgent in the 1980s with the development of expert systems. These systems utilise knowledge bases and rules to simulate the decision-making process of expert in specific domains. While expert systems found success in some applications, they were limited in handling uncertainty and lacked the ability to learn from data.

However, in 1990s brought significant advancements in machine learning, particularly with the rise of neutral networks. However, the computational resources required to train large neutral networks were limited at that time, hindering progress. The 2000s saw AI being increasingly integrated into various applications, such as natural language processing and speech recognition systems. Google's search algorithms, which relied on AI technologies, revolutionised information retrieval. Additionally, advancements in robotic and computer

vision paved the way for applications in autonomous vehicle and industrial automation. The breakthrough in deep learning revolutionized AI research. Improvement in computational power and the availability of large datasets enabled the training of deep neutral networks for task like image recognition, speech synthesis, and language translation. Companies like Google, Facebook, and Open AI played significant roles in pushing the boundaries of AI capabilities.

Today, AI technologies have become ubiquitous in everyday life. Virtual assistants like Google assistant, Siri and Alexa, recommendation systems on research platforms, and personalized advertisements on social media are some examples of AI applications used widely today. As AI technologies continue to advance, they also bring forth ethical and social challenges. Issues related to bias in AI systems, privacy concerns, and the potential impact on employment have become significant areas of discussion and research. The historical development of AI technologies is an ongoing process, and as we move forward, AI is likely to play an increasingly important role in shaping various aspects of human society.

AI has been adopted in libraries all over the world for the purpose of enhancing efficient information service delivery. Literature revealed that libraries and librarians in developed countries have reached an advanced stage in the use of AI such as Robots, chatbots, intelligent systems, recommendation systems just to mention a few. However, third world nations like Nigeria are still at the nursery stage.

AI has significant potentials to revolutionized libraries and enhance various aspect of library services and operations such as information retrieval and recommendations, collection management, language translation, intelligent data management. AI technologies serves as valuable tools for librarians empowering them to deliver more personalized, efficient, and innovative services to library patrons while also enriching their own professional capabilities

and expertise. AI technologies can support librarians in conducting in-dept research, providing relevant scholarly articles, papers and other resources to aid in their work.AI can streamline administrative processes, such as scheduling, resource allocation, and budgeting, making library management more efficient. AI powered chatbots and virtual assistants can handle routine enquiries from library patrons, providing quick and accurate responses to common questions, and thus reducing the workload on librarians.

AI technologies can automate routine tasks, such as data entry, cataloguing, and circulation management, freeing up librarians' time to focus on more complex and creative task. Also, AI powered search engine can provide librarians with more accurate and relevant search results, making it easier for them to find and retrieve information for library patron. However, despite its potentials and benefits to librarians, it appears that librarians in Nigeria particularly Edo and Delta State have not fully embraced these technologies.

As shown in this review, there is some level of awareness of the existence of AI among librarians in Nigeria, it is not clear as to the influence of this awareness on the use of AI within the library landscape. Factors such as situation awareness and digital competence have not been fully examined as factors influencing the use of AI technologies among librarians. Several studies confirm high level of awareness among librarians. However, this study being hinged on situation awareness, highlight the sub construct of projection. Projection as part of situation awareness refers to the ability of an individual or group to predict the future outcome of an activity. In the context of this study, projection speaks to the ability of librarians to recognize the benefit or dangers of using AI technologies. This concept is often measured under factors such as attitude and perception. In projection, we seek to measure the understanding of librarians regarding the merits and demerits of using AI technologies.

Studies on adoption of technological innovation such as AI have shown that recognized perceive ease of use and perceive usefulness as significant predictor of acceptance and use of any technology. The Researcher also investigated studies on digital competence and observed that digital competence can play a key role in the use of innovations such as AI technologies.

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Chapter Three

Methodology

This chapter presents the method adopted in carrying out the study under the following sub-headings: research design, the population of the study, sample size and sampling technique, instruments for data collection, validity of the research instrument, reliability of the instrument, method of data collection and method of data analysis.

3.1 Research Design

This study will employ the descriptive survey research design. This method is chosen because of the flexibility it provides the researcher in gathering pertinent data using appropriate instruments such as questionnaires. This enables the measurement of attitudes, opinions, perceptions and the dynamics of the phenomenon being investigated. Importantly, it allows for an accurate representation of the variables under study and the interrelationships between them.

3.2. Population of the Study

The population for this study consists of one hundred and twenty-five (125) librarians in University Libraries in Edo and Delta States. The figure consists of those who are in the 'librarian cadre' in the university libraries in the two States under study. This is presented in Table 3.1

Table 3. 1. Showing the distribution of librarians according to their institution at the time of this study

S\N	Name of University	No. of Librarians
1	University of Benin, Benin City, Edo State	30
2	Ambrose Alli University, Ekpoma, Edo State	26
3	Edo State University, Uzairue, Edo State	1
4	Benson Idahosa University, Benin City, Edo State	7
5	Igbinedion University, Okada, Edo State	6
6	Glorious Vision University, Ogwa, Edo State	6
7	Wellspring University, Evbuobanosa, Edo State	3
8	Mudiame University, Irrua, Edo State	Nil
9	Federal University of Petroleum Resources, Effurun, Delta State	16
10	Admiralty University, Ibusa, Delta State	8
11	Nigerian Maritime University, Okerenkoko, Delta State	4
12	Delta State University, Abraka, Delta State	15
13	Edwin Clark University, Kaigbodo, Delta State	4
14	Michael and Cecilia Ibru University, Agbara-Otor, Delta State	2
15	Western Delta University, Oghara, Delta State	5
16	Margaret Lawrence University, Umunede, Delta State	Nil
17	Sports University of Nigeria, Idumuje-Ugboko, Edo State	Nil
18	Dennis Osadebay University, Asaba Delta State	17

Sources: University Establishment

3.3. Sample and Sampling Technique

The sample size for this study is 125 librarians. The researcher adopted the total enumerative sampling technique to investigate the entire 125 librarians in the university libraries in Edo and Delta States. The entire population of this study was adopted because the population is not large and the researcher has enough time to conduct the study. This is in line with the submission of a group of researchers who opined that the entire population can be studied if the population is not large and when the researcher has enough time and fund to conduct the study[1]. Hence, the researcher adopted the entire population so as to obtain accurate data and desirable level of precision.

3.4. Instruments for Data Collection

The main instrument that will be used for the study is a questionnaire titled situation awareness, digital competence and motivation to use artificial intelligence questionnaire. The

instrument was adapted from various validated and tested studies. The questionnaire is divided in to four sections, A-D as follows;

Section A- Demographic information: This contains four items on personal data of each respondent such as name of name of institution, professional status, age and gender.

Section B: Motivation to use artificial intelligence technologies. This contains 8 items adapted from literature[2] It has a four-scale type of questions. The response format is Strongly Agree (SA); Agree (A); Disagree (D); Strongly Disagree (SD). Example of question is: using AI technologies will improve my job performance; using AI technologies would make it easier to do my job; I believe navigation of AI technologies would be easy for me.

Section C: Situation of awareness of artificial intelligence technologies. This section is adapted from situation awareness theory. The statements in the section were adapted from literature[3]. It has four scale type. The respond format is Very High Extent (VHE); High Extent (HE); Low Extent (LE); Very Low Extent (VLE). Example of questions are: I have heard about artificial intelligence technologies; I am aware of what artificial intelligence technologies are used for; using artificial intelligence technologies can boost the speed of carrying out my job.

Section D: Digital competence among librarians. This section contains five (5) main constructs; information and data literacy, communication and collaboration, digital content creation, problem solving, safety and security. The statements in each construct were adapted from literature[4] [5]. It has a four-scale question type. The respond format is Very High Extent (VHE); High Extent (HE); Low Extent (LE); Very Low Extent (VLE) Examples of questions are; I can articulate my information need; I can store, manage, and organize digital data, information and content.

3.5 Validity of the Research Instrument

In other to ensure face and content validity, the measuring instrument will be giving to the supervisor and other experts in the field who will check to ensure accuracy and precision of the instrument. Based on the criticisms and corrections of the experts, the instrument will be modified to achieve the research objectives.

3.6. Reliability of the Instrument

The reliability of the instruments will be established using Cronbach's Alpha method[6]. The Cronbach's Alpha is a one test scale and it is used to measure internal consistency. It is most commonly used for multiple questions in survey and test questions that form a scale and it helps to determine if the scale is reliable. To achieve this, copies of the questionnaire for the study will be administered to 30 respondents in University of Port Harcourt, River State which is not part of the study. The reliability coefficient for the independent and dependent variable will be determined and reported. If considered high enough, the instrument will be deemed reliable.

3.7 Method of Data Collection

A letter of introduction and project attestation would be obtained from the Department of Information Management, Lead City University which would be used to gain permission to administer the survey on the librarians in the selected university libraries. The questionnaire would be administered both physically and online with the support of two research assistants who would be trained by the researcher. The training of the Research assistants would be carried out virtually on Google meet. The whole data collection exercise from all the institutions under study would cover a period of three weeks combined.

3.8 Method of Data Analysis

The data collected from the survey would be coded and analysed using the IBM SPSS statistics software version 2020. The demographic data would be analysed using descriptive statistics such as simple frequency tables and percentages. The research questions would be analysed using descriptive statistics. Hypothesis one and two would be analysed using simple linear regression and hypothesis three would be analysed using multiple linear regression with all hypotheses tested at 0.05 level of significance.

Endnotes

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Chapter Four

Results and Discussion of Findings

This chapter dealt with data presentation, analysis and the interpretation of the results. The analysis is guided by the specific objectives and hypotheses that were formulated in the study. The first section shows the presentation of the descriptive analysis using tables showing percentages and interpretations below the tables. Section two presents inferential statistics and discussion of findings comes at the later end of the chapter. The results presented were based on the research questions and hypotheses, which the study set out to answer and understudy. The Decision rule: 1.0.-1.49 = very low, 1.50-2.49 – low, 2.50 -3.49 = High, 3.50-4.00 = Very high. Hypothesis will be test at 0.05 level of significance.

4.1. Questionnaire Return Rate

A total of one hundred and seventy-five (125) copies of questionnaire were administered, and one hundred and seven (107) copies responses were received all duly filled. The usable questionnaire represented 82% response rate.

4.2: Demographic Data Analysis of Respondents

Table 4.1: Demographic distribution of respondents

Demographics	Items	Frequency	Percent
Gender	Male	46	43.0
	Female	61	57.0
	Total	**107**	**100.0**
Age			
	18-30	43	40.2
	31-40	30	28.0
	41-50	31	29.0
	61 and above	3	2.8
	Total	**107**	**100.0**
Staff Cadre			
	Asst. Librarian	49	45.8
	Librarian II	12	11.2
	Librarian I	23	21.5
	Senior Librarian	10	9.3
	Principal Librarian	4	3.7
	Deputy University Librarian	1	.9
	University Librarian	8	7.5
	Total	**107**	**100.0**
Educational Qualifications			
	B.sc/BLIS	67	62.6
	Msc/MLIS	29	27.1
	PhD.	11	10.3
	M.phil	Nill	
	Total	**107**	**100.0**

Source: Researcher, 2023

Table 4.1 above shows the demographic distribution of the respondents. The table revealed majority of the respondents 61 making 57% of the population are female gender while the remaining 46 making 43% are males. The largest age group is "18-30," which comprises 40.2% of the total. The "31-40" and "41-50"

age groups are also well-represented, with 28% and 29% respectively. Only a small proportion, 2.8%, falls into the "61 and above" category. This suggests a relatively young to middle-aged population." Asst. Librarian" is the most common staff cadre, accounting for 45.8% of the total. Other staff cadres like "Librarian II," "Librarian I," and "Senior Librarian" 11.2%, 21. 5% and 9.3% respectively also have significant representation. Principal librarians make 3.7% of the population, deputy university librarians make 0.9% and university librarian making 7.5% of the population. Looking at the education qualifications, "B.sc/BLIS" is the most common qualification, with 62.6% of respondents holding this degree followed by "MSc/MLIS" is the second most common qualification, at 27.1%. A smaller percentage, 10.3%, holds a "PhD" qualification. There are no respondents with an "M.Phil." qualification in the study population.

4.3. Analys of Research Questions

4.3.1. Research Question 1: What is the level of motivation to use artificial intelligence technologies by librarians in Edo and Delta States?

Table 4.2 Motivation to use Artificial Intelligence Technologies

Perceived Usefulness	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean
Using AI technologies would enable me to accomplish my task quickly	36 (33.6%)	61 (57.0%)	10 (9.3%)		3.69
Using AI technologies improve my job performance	46 (43.0%)	52 (48.6%)	9 (8.4%)		3.51

Using AI technologies would make it easier to do my job	76 (71.0%)	30 (28.0%)		1 (.9%)	3.61
AI technologies is useful in my job	56 (52.3%)	50 (46.7%)	1 (.9%)		3.56
Weighted Mean					**3.6**
Perceived Ease of Use					
I believe that interaction with AI technologies would be clear and understandable	66 (61.7%)	40 (37.4%)	1 (.9%)		3.42
I believe navigation of AI technologies would be easy for me	62 (57.9%)	43 (40.2%)	2 (1.9%)		3.24
Learning to use AI technologies would be easy for me	47 (43.9%)	58 (54.2%)	2 (1.9%)		3.35
It would be easy for me to become skilful at using AI technologies.	47 (43.9%)	56 (52.3%)	4 (3.7%)		3.40
Weighted Mean					3.4
Grand Mean					**3.5**

The Decision rule: 1.0.-1.49 = very low, 1.50-2.49 – low, 2.50 -3.49 = High, 3.50-4.00 = Very high.

Source: Researcher, 2023

Table 4.2 above revealed the motivation to use artificial intelligence technologies among librarians based on two measures of perceived usefulness and perceived ease of use. From the

table, it was revealed that 36 (33.6%), Strongly Agree and 61 (57.0%) Agree that using AI technologies would enable them to accomplish task quickly. However, 10 (9.3%) Disagree. The Mean score of 3.69 showed that the majority of respondents (90.6%) either agreed or strongly agreed that AI technologies would help them complete tasks quickly, indicating a positive perception of usefulness.

Majority of the respondents 52 (48.6%) Agreed and 46 (43.0%) strongly agreed to the perception that using AI technologies improves their job performance. However, 9 respondents

The means score of 3.51 showed that a significant proportion of respondents (91.6%) agreed or strongly agreed that AI would improve job performance, showing a positive perception.

Moreso, majority of the respondents 76 (71.0%) strongly agree while 30(28.0%) agree that using AI technologies would make it easier to do their job. While only 1 respondent making 0.9%) disagree. The means score of 3.61 showed that the majority of respondents (99%) either strongly agreed or agreed that AI technologies would make their job easier, indicating a very positive perception of usefulness.

Majority of the respondents 56 (52.3%) strongly agreed, and 50(46.7%) agreed that AI technologies are useful in my job. However, 1(0.9%) disagreed with the perceptions. The mean score of 3.56 showed that majority of respondents (99%) either strongly agreed or agreed that AI technologies are useful in their job, reflecting a positive perception of usefulness.

As regards perceived ease of use, the table revealed that majority of the respondents, 66 (61.7%) strongly agree, and 40 (37.4%) agree while 1(0.9%) disagreed with the believe that interaction with AI technologies would be clear and understandable. The means score of 3.42 affirmed that most respondents (99.1%) either strongly agreed or agreed that interaction with AI technologies would be clear and understandable, indicating a positive perception of ease

of use. Furthermore, majority, 62 (57.9%) strongly agreed, 43 (40.2%) agreed and 2 making 1.9%) disagree with the believe that navigation of AI technologies would be easy for them. The mean score of 3.24 showed that majority of respondents (98.1%) either strongly agreed or agreed that navigating AI technologies would be easy for them, although there is a slightly lower agreement compared to other items.

More so, many of the respondents, 47 (43.9%) agreed while majority 58(54.2%) strongly agreed that learning to use AI technologies would be easy for them of which 2 respondents (1.9%) however disagreed. The mean score of 3.35 showed that most respondents (98.1%) either strongly agreed or agreed that learning to use AI technologies would be easy for them. Finally, majority of the respondents 56 (52.3%) strongly agreed, while 47 (43.9%) agreed that it would be easy for them to become skilful at using AI technologies. However, few 4 (3.7%) disagreed. The mean score of 3.40 showed that majority of respondents (96.2%) either strongly agreed or agreed that becoming skilful at using AI technologies would be easy for them.

Overall, the "Grand Mean" for all items related to perceived usefulness and ease of use is 3.5, indicating a generally positive perception of AI technologies among respondents. Respondents largely perceived AI technologies as useful, with strong agreement or agreement for most items related to perceived usefulness. Ease of use is also positively perceived, with respondents believing that interaction, navigation, and learning to use AI technologies would be relatively easy.

4.3.2. Research Question 2: What is the level of situation awareness among librarians in Edo and Delta States?

Table 4.3. Situation of Awareness of Artificial Intelligence Technologies

Options Perception	Very High Extent	High Extent	Low Extent	Very Low Extent	Mean
I have heard about artificial intelligence technologies	19 (17.8%)	31 (29.0%)	44 (41.1%)	13 (12.1%)	3.54
I have heard about artificial intelligence but know nothing about it	19 (17.8%)	49 (45.8%)	29 (27.1%)	10 (9.3%)	2.52
I have come across artificial intelligence technologies but know just a little about it	31 (29.0%)	50 (46.7%)	23 (21.5%)	3 (2.8%)	2.72
I have come across it and know quite a bit about it	34 (31.8%)	38 (35.5%)	32 (29.9%)	3 (2.8%)	3.02
Weighted Mean					**2.95**
Comprehension					
I am aware of the nature of artificial intelligence technologies	28 (26.2%)	50 (46.7%)	26 (24.3%)	3 (2.8%)	3.16
I am aware of what artificial intelligence technologies are used for	41 (38.3%)	54 (50.5%)	12 (11.2%)		3.27
I am aware of how to use artificial intelligence technologies	28 (26.2%)	50 (46.7%)	26 (24.3%)	3 (2.8%)	2.96

I am aware of the danger and opportunity of using artificial technologies	34 (31.8%)	38 (35.5%)	32 (29.9%)	3 (2.8%)	2.96
Weighted Mean					**3.1**
Projection					
I would find artificial intelligence useful in my career	51 (47.7%)	52 (48.6%)	4 (3.7%)		3.44
Using artificial intelligence enhance my prestige as a modern librarian	52 (48.6%)	52 (48.6%)	2 (1.9%)	1 (.9%)	3.45
Using artificial intelligence technologies can boost the speed of carrying out my job	55 (51.4%)	48 (44.9%)	4 (3.7%)		3.48
Using artificial intelligence would allow me to be more useful to myself, employer and the users	53 (49.5%)	49 (45.8%)	5 (4.7%)		3.45
Weighted Mean					**3.5**
Grand Mean					**3.2**

The Decision rule: 1.0.-1.49 = very low, 1.50-2.49 – low, 2.50 -3.49 = High, 3.50-4.00 = Very high.

Source: Researcher, 2023

Table 4.3 above explains the level of awareness of librarians as regards artificial intelligence. Awareness is measured using perception, comprehension and projection. The table showed that the majority of respondents (70.8%) have at least heard about AI technologies to some extent, with a significant proportion (46.9%) having a high or very high level of awareness. 19 (17.8%) have heard about AI to a very high extent, 31 (29.0%) to a high extent, a

substantial number 44 (41.1%) to a low extent while 13 (12.1%) said they have heard about AI to a very low extent.

A substantial number 49 (45.8%), and 19 (17.8%) have heard about artificial intelligence but know nothing about it to a high extent and to a very high extent. However, 29 (27.1%) and 10 (9.3%) have heard about artificial intelligence but know nothing about. The mean score of 2.52 showed that a substantial portion of respondents (63.6%) have heard about AI but admit to knowing little or nothing about it.

Furthermore, while majority of respondents perceived 50 (46.7%) that they have come across artificial intelligence technologies but know just a little about it to a high extent, a substantial number of respondents 31 (29.0%) believe that they have come across AI but know just little about it to a very high extent. However, 23 (21.5%) of the respondents agreed that they have come across AI but know just little about it to a low extent while 3 respondents making (2.8%) said they have to a low extent. The mean score of 2.72 showed that many respondents (75.7%) have come across AI technologies but possess only limited knowledge about them.

Looking at the assertion 'I have come across it and know quite a bit about it' majority of the respondent 34 (31.8%) agreed with this assertion to a very high extent, 38 (35.5%) to a high extent, 32 (29.9%) to a low extent and 3 (2.8%) and to a very low extent. The mean score of 3.02 a notable proportion (67.3%) of respondents claim to have some knowledge about AI technologies, with a substantial percentage having a high or very high level of knowledge.

For the awareness of the nature of artificial intelligence technologies, majority of respondents 50 (46.7%) agreed to High Extent, 28 (26.2%) to very High Extent, 26 (24.3%) to a low extent 3 (2.8%) to a very low extent. With a mean score of 3.16, majority (73.0%) of respondents have at least some awareness of the nature of AI technologies, with a significant portion (46.7%) having a high extent of awareness.

Most respondents (88.8%) are aware of what AI technologies are used for, with a significant percentage (50.5%) having a high extent of awareness, 41(38.3%) very high extent of awareness and 12(11.2%) low extent of awareness. The mean score of 3.27 showed that most respondents are aware of what AI technologies are used for. A substantial portion (72.9%) of respondents claim some level of awareness about how to use AI technologies with a significant percentage of 50(46.7%) have a high extent of awareness, 28(26.2%) very high extent of awareness, 26(24.3%) low extent of awareness and 3(2.8%) a very low extent of awareness. The means score of 2.96 shows a moderate level of knowledge of how to use AI technologies. Many of the respondents (67.3%) are aware of both the potential dangers and opportunities associated with using AI technologies. As a substantiate number 38 (35.5%) have a high extent of awareness, 34 (31.8%) reported a very high extent of awareness, 32(29.9%) reported a low extent of awareness, 3(2.8%) reported a very low extent of awareness. The mean score of 2.96 however showed a moderate level of awareness of the potential dangers and opportunities associated with using AI technologies.

A significant majority (96.3%) believe that AI would be useful in their careers, with a high or very high extent of agreement. A significant number of respondents 51 (47.7%) reported a very high extent of projection. 52 (48.6%) of the respondents projected that AI would be useful in their careers while only 4(3.7%) reported a low level of projection about the usefulness of AI in their career. Furthermore, most respondents (97.2%) believe that using AI enhances their prestige as modern librarians. As a significant number of respondents agreed with the projection 52 (48.6%) to very high extent and to a high extent. The means score of 3.45 showed a positive projection of the respondents about the usefulness of AI. A significant majority (96.3%) agree that AI can improve the speed of their job performance. This was further affirmed by the mean score of 3.48 which reported a high projection of AI usefulness.

Furthermore, the majority (95.3%) agree that AI can make them more useful to themselves, their employers, and users.

Overall, the "Grand Mean" for all items is 3.2, indicating an overall positive perception, comprehension, and projection regarding AI technologies among respondents. Respondents generally have a positive perception of AI, with most believing it is useful for their careers and can enhance their prestige and job performance. However, there is a significant range of knowledge about AI, with some respondents having limited knowledge and others having a high level of knowledge.

Research Question 3: What is the level of digital competence among librarians in Edo and Delta State?

Table 4.4. Digital Competence of librarians

Options	Very High Extent	High Extent	Low Extent	Very Low Extent	Mean
Information and Data Literacy					
I can articulate my information need	46 (43.0%)	56 (52.3%)	5 (4.7%)		3.38
I can locate and retrieve digital data, information and content	48 (44.9%)	54 (50.5%)	4 (3.7%)	1 (.9%)	3.39
I can judge the relevance of the source and its content	40 (37.4%)	58 (54.2%)	8 (7.5%)	1 (.9%)	3.28
I can store, manage, and organize digital data, information and content	47 (43.9%)	54 (50.5%)	5 (4.7%)	1 (.9%)	3.37
Weighted Mean					**3.4**
Communication and Collaboration					
I can communicate and collaborate through digital technologies while being aware of cultural	45 (42.1%)	51 (47.7%)	9 (8.4%)	2 (1.9%)	3.30

and generational diversity					
I can share data, information and digital content with others through appropriate digital technologies	45 (42.1%)	55 (51.4%)	7 (6.5%)		3.36
I can participate in society through the use of public and private digital services	40 (37.4%)	61 (57.0%)	5 (4.7%)	1 (.9%)	3.31
I can manage my digital presence, identity and reputation	45 (42.1%)	57 (53.3%)	5 (4.7%)		3.37
Weighted Mean					**3.3**
Digital Content Creation					
I can create and edit digital content in different formats, to express myself through digital means	40 (37.4%)	47 (43.9%)	19 (17.8%)	1 (.9%)	3.18
I understand how copyright and licences apply to data, information and digital content	33 (30.8%)	54 (50.5%)	19 (17.8%)	1 (.9%)	3.11
I know how to give understandable instructions for a computer system	36 (33.6%)	57 (53.3%)	13 (12.1%)	1 (.9%)	3.20
I can modify, refine, improve and integrate information content into an existing body of knowledge to create new, original and relevant content and knowledge	31 (29.0%)	55 (51.4%)	18 (16.8%)	3 (2.8%)	3.07
Weighted Mean					**3.14**
Problem Solving					

I can identify needs, evaluate, select and use digital tools and possible technological responses to solve them	32 (29.9%)	61 (57.0%)	12 (11.2%)	2 (1.9%)	3.15
I can use digital technologies to create knowledge and to innovate process and product	35 (32.7%)	60 (56.1%)	11 (10.3%)	1 (.9%)	3.21
I can identify technical problems when operating devices and to solve them	27 (25.2%)	57 (53.3%)	21 (19.6%)	2 (1.9%)	3.02
I can support others with their digital competence development	29 (27.1%)	57 (53.3%)	20 (18.7%)	1 (.9%)	3.07
Weighted Mean					**3.1**
Safety and Security					
I can protect my devices and digital content in digital environment	38 (35.5%)	47 (43.9%)	22 (20.6%)		3.15
I can protect my personal data and privacy in digital environment	33 (30.8%)	58 (54.2%)	15 (14.0%)	1 (.9%)	3.15
I am aware of the environmental impact of digital technologies and their use	39 (36.4%)	55 (51.4%)	12 (11.2%)	1 (.9%)	3.23
I am able to protect myself and others from possible dangers in digital environment	36 (33.6%)	47 (43.9%)	23 (21.5%)	1 (.9%)	3.10
Weighted Mean					**3.4**
Grand Mean					**3.3**

The Decision rule: 1.0.-1.49 = very low, 1.50-2.49 – low, 2.50 -3.49 = High, 3.50-4.00 = Very high.

Source: Researcher, 2023

The table 4.4. provided summarizes survey responses related to information and data literacy, communication and collaboration, digital content creation, problem solving, safety and security in a digital environment.

A majority of respondents102 (95.3%) believe they can articulate their information needs to a high or very high extent while minority 5(4.7%) cannot. The mean score of 3.38 showed that majority of the respondents can articulate their information needs. More so, most respondents 102(95.4%) believe they can locate and retrieve digital data and information effectively. However, minority5(4.6%) cannot locate and retrieve digital data and information effectively. This was solidified by the means score of 3.39 which showed that majority of the respondents can locate and retrieve digital data and information effectively. A significant majority 98 (91.6%) feel confident in judging the relevance of digital sources and content. However, 9(8.4%) cannot judged the relevance of the source and its content. The means score of 3.28 showed a positive answer of respondents' ability to judge the relevance of digital sources. Most respondents 101(94.4%) believe they can effectively store, manage, and organize digital data and information. However, 6(5.6%) cannot store, manage and organize digital data. with a means score of 3.37. it is concluded that majority of the respondents can store, manage and organize digital data.

A majority 96 (89.8%) of the respondents can communicate and collaborate effectively through digital technologies, considering diversity, minority 11(10.2%) the respondents cannot communicate and collaborate effectively through digital technologies. The means score of 3.30 showed a high-level extent of digital ability with regards to ability to communicate and collaborate through digital technologies among librarians. Most respondents 100 (93.5%) can share digital content effectively with others using appropriate technologies while 7(6.5%) of the respondents cannot. The means score of 3.36 showed that theirs is high level extent of digital literacy skills with regards to ability to share digital

content effectively with other using appropriate technologies. A significant majority 101 (94.4%) believe they can effectively participate in society through digital services while 6(5.6%) believed they cannot effectively participate in society through digital services. The means score of 3.31 however showed that majority are capable of effectively participating in society through digital services. Most respondents 102(95.4%) believe they can effectively manage their digital presence and identity. However, 5(4.7%) believed they cannot. The mean score of 3.37 showed a very high level of competence and digital literacy skills with regards to ability to manage digital presence and identity.

A majority 87(81.3%) can create and edit digital content effectively. However, 20(18.7%) cannot create and edit digital content effectively. The means score of 3.18 showed a high-level competence but percentage rate of 18.7% a significant number of librarians are not able to create and edit digital content effectively. Most respondents 87(81.3%) understand how copyright and licenses apply to digital content. However, 20(18.7%) of the respondents does not understand how copyright and licenses apply to digital content. The means score of 3.11 showed a moderate level of digital ability with regards to ability to understand how copyright and licenses apply to digital content. A majority 93(87.0%) of the respondents can provide understandable instructions for computer systems. However, a minority but significant number of respondents 14(13%) cannot provide understanding instruction for computer systems. The means score of 3.20 showed a majority of the respondents digitally literates in this regard. A majority 86(80.4%) can effectively modify and integrate information content to create new, relevant content and knowledge. However, 21(19.6%) of the respondents making a significant number although minority cannot effectively modify and integrate information content to create new relevant content and knowledge. The means score of 3.07 supports that there is high level skills and ability in the area of creation of new relevant content and knowledge.

Most of the respondents 93(86.9%) can identify needs and use digital tools for problem-solving while 14(13.1%) of the respondents cannot. With a means score of 3.15, it is believed that majority can identify needs and use digital tools for problem solving. A majority 95(88.8%) can use digital technologies for knowledge creation and innovation while 12(11.2%) cannot. The means score of 3.21 showed that there is high literacy skill with regard to ability to use digital technologies for knowledge creation and innovation. A majority 64 (78.5%) can identify and solve technical problems when using digital devices. However, a significant figure 23(21.5%) cannot identify and solve technical problems when using digital devices. The means score of 3.20 showed that there is moderate knowledge with regards to ability of identify and solve technical problems when using digital devices. Many respondents86 (80.4%) can support others in developing their digital competence while 21(19.6%) cannot. The mean score of 3.07 shoed a high-level ability on the side of the respondents with regards to supporting others in developing their digital competence

Most respondents 85 (79.4%) believe they can protect their devices and digital content effectively while a significant number of 22(20.6%) cannot. The mean score of 3.15 showed that digital knowledge with respect to respondents' ability to protect their devices and digital content is high. A majority of the respondent 91(85.0%) believe they can protect their personal data and privacy in a digital environment while a minority 16(14.9%) cannot. With a mean score of 3.15, high knowledge of ability to protect personal data and privacy in digital environment is reported. Most of the respondents 94 (87.8%) are aware of the environmental impact of digital technologies. While 13(12.1%) are not. The means score of 3.23 showed a high awareness of environmental impact of digital technologies among librarians. Majority 83(77.5%) believe they can protect themselves and others from digital dangers effectively while a substantiate percentage 24(22.5%) of the respondents cannot protect themselves and

other from digital dangers. The mean score of 3.10 showed a high-level knowledge of library staff ability to protect themselves and others from digital dangers.

The "Grand Mean" for all items is 3.3, indicating a generally high level of digital competence and confidence among respondents. Respondents feel confident in their ability to articulate information needs, locate digital data, judge source relevance, and manage digital content. They also exhibit competence in communication, collaboration, digital content creation, problem-solving, safety, and security in digital environments. The survey suggests that respondents possess a well-rounded set of digital literacy skills and are aware of digital responsibilities and ethical considerations.

4.4. Test of Hypothesis

Ho1: There will be no significant influence of situation awareness on the motivation to use artificial intelligence technologies among librarians in Edo and Delta State.

Table 4.5a-c: Significance influence of situation awareness on motivation to use artificial intelligence.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.647[a]	.418	.413	.30318

a. Predictors: (Constant), Awareness of AI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.943	1	6.943	75.542	.000[b]
	Residual	9.651	105	.092		
	Total	16.595	106			

a. Dependent Variable: Motivation to Use AI

b. Predictors: (Constant), Awareness of AI

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.600	.217		7.361	.000
	Awareness of AI	.592	.068	.647	8.691	.000

a. Dependent Variable: Motivation to Use AI

Table 4.5a-c presents the results of the simple regression analysis for the relationship between situation awareness of artificial intelligence and motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria. From the results in Table 4.5a, situation awareness has a significant but weak relationship with the motivation to use artificial intelligence among librarians in university libraries in Edo and Delta States, Nigeria ($R = 0.647^a$, $p<0.05$). The coefficient of determination (Adj. R^2) of 0.413 also shows that situation awareness explains 41.3% of motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria while the remaining 59.7% discrepancy in the motivation to use artificial intelligence among librarians in university libraries in Edo and Delta States, Nigeria is explained by other variables which are not considered in this study.

Table 4.5a presents the results of ANOVA (Overall Model Significance) of regression test which revealed that Situation awareness has significant relationship with motivation to use artificial intelligence among librarians in university libraries in Edo and Delta States, Nigeria. This can be explained by the F-value (75.542) and low p-value (0.000^b) which is statistically significant at 95% confidence interval. Hence, the result posited that situation awareness has weak significance influence on the motivation to use artificial intelligence among librarians in university libraries in Edo and Delta States, Nigeria. Furthermore, the results of regression coefficients in table 4.6c revealed that at 95% confidence level, a unit change in situation awareness will lead to a 0.592 increase in the motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria, given that all other factors are held constant. On the strength of this result (Adj. $R^2 = 0.413$, $F(1,105) = 75.542$, $p = 0.000$), this study therefore rejects the null hypothesis one ($H_0 1$) which states that There is no significant influence of situation awareness on motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States Nigeria**.**

Ho2: There will be no significant influence of digital competency on the motivation to use artificial intelligence technologies among librarians in Edo and Delta State.

Table 4.6a-c: Significant influence of digital competence on motivation to use artificial intelligence.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.450[a]	.202	.195	.35509

a. Predictors: (Constant), Digital Competence

ANOVA[a]

Model	Sum of	Df	Mean	F	Sig.

		Squares		Square		
1	Regression	3.355	1	3.355	26.610	.000[b]
	Residual	13.239	105	.126		
	Total	16.595	106			

a. Dependent Variable: Motivation to Use AI

b. Predictors: (Constant), Digital Competence

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.272	.235		9.654	.000
	Digital Competence	.373	.072	.450	5.158	.000

a. Dependent Variable: Motivation to Use AI

Table 4.6a-c presents the results of the simple regression analysis for the relationship between digital competence on motivation to use artificial intelligence among librarians in university libraries in Edo and Delta States Nigeria. From the results in Table 4.6a, digital competence has a significant but weak relationship on the motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States Nigeria (R = 0. .450[a], $p<0.05$). The coefficient of determination (Adj. R^2) of 0.195 also shows that digital competence explains 19.5% of the motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria while the remaining 79.5% discrepancy in the motivation to use artificial intelligence among librarians in university libraries in Edo and Delta States, Nigeria is explained by other variables which are not considered in this study.

Table 4.6b presents the results of ANOVA (Overall Model Significance) of regression test which revealed that digital competence has significant relationship with motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria.

This can be explained by the F-value (26.610) and low p-value (0.000^b) which is statistically significant at 95% confidence interval. Hence, the result posited that situation awareness has a strong significance influence on the motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria. Furthermore, the results of regression coefficients in table 4.6c revealed that at 95% confidence level, a unit change in digital competence will lead to 0.373 increases in the motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria, given that all other factors are held constant. On the strength of this result (Adj. $R^2 = 0.195$, $F(1,105) = 26.610$, $p = 0.000^b$), this study therefore rejects the null hypothesis one (H_02) which states that there is no significant influence of digital competence on motivation to use artificial intelligence among librarians in university libraries, Edo and Delta States, Nigeria.

Ho3: There will be no significant joint influence of situation awareness and digital competency on the motivation to use of artificial intelligence technologies among librarians in Edo and Delta States.

Table 4.7a-c: Joint influence of situation awareness and digital competence on motivation to use artificial intelligence

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.651[a]	.424	.413	.30320

a. Predictors: (Constant), Awareness of AI, Digital

Competence

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.034	2	3.517	38.254	.000[b]
	Residual	9.561	104	.092		
	Total	16.595	106			

a. Dependent Variable: Motivation to Use AI

b. Predictors: (Constant), Awareness of AI, Digital Competence

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.515	.234		6.479	.000
	Digital Competence	.077	.078	.092	.990	.324
	Awareness of AI	.541	.085	.591	6.325	.000

a. Dependent Variable: Motivation to Use AI

Table 4.7a-c presents the results of the multiple regression analysis for the combined influence of both situation Awareness and Digital Competence on motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria. From the results, in table 4.7a, the two constructs of Situation Awareness and Digital Competence have positive and significant influence on motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria ($R = 0.651^{a}$, $p<0.05$). The coefficient of determination (Adj. R^2) of 0.413 shows that both independent variables explain 41.3% of the variation in the motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria. While the remaining 59.7% variation in the motivation to use Artificial Intelligence among

Librarians in University Libraries, Edo and Delta State, Nigeria explained by other variables not explained in this study.

More so, table 4.7b presents the results of ANOVA (Overall model significance) of regression test which revealed that the independent variables (Situation Awareness and Digital Competence) have significant influence on motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria, this is explained by the F-value (38.254) and low p-value (0.000) which is statistically significant at 95% confidence interval. Hence, the results revealed that both variables (Technological and Organizational factors) significantly influenced the motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria.

Furthermore, the results of regression coefficients in table 4.8c, showed that one of the independent variables (Situation Awareness) had a significant influence on motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria. While Digital competence does not have significant influence on motivation to use artificial intelligence among Librarians in University Libraries, Edo and Delta State. Specifically, the showed that 95% confidence level, a unit change in situation awareness will lead to a 0.541 increase motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria, given that all other factors are held constant. Also at 95% confidence level, a unit change Digital Competence will lead to 0.077increase in motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria. It is therefore on the strength of this result (Adj. R^2 = 0.413, F(2, 104) = 38.254, p = 0.000), this study therefore on one hand this multiple regression analysis rejects the null hypothesis ($H_0$3) which states that there is no joint significant influence of Situation Awareness while on the other hand accept the hypothesis as the regression analysis showed that Digital Competence does not have significant

influence on the motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria.

4.5. Discussion of Findings

The responses to the first research question showed that the motivation to use Artificial Intelligence by librarians is high with a grand mean of 3.5. The motivation is decided by the perceived usefulness and perceived ease of use. The two constructs of perceived usefulness and perceived ease of use were found to be high. That means they are veritable and viable predictors of the motivation to use Artificial Intelligence among librarians. This finding is in line with previous study which show that both Perceived Usefulness (PU)and Perceive Ease of Use (PEOU) have significant contribution to AI technologies adoption[1]. In fact, the study further shows that respondents perceive AI technologies as able to improve their performance in the future. In the case of Perceive Ease of Use (PEOU), studies have equally shown that respondents who perceive that they could learn and operate AI technologies very well, will be motivated to adopt the technology. This was corroborated with other studies which indicated that there is positive relationship between the construct of Perceive Usefulness (PU) and Perceived Ease of Use (PEOU) and the use of technology[2],[3].

This study supports the assertions that perceived usefulness is a crucial concept that sheds light on how people perceive and assume the value of using a particular technology to enhance their performance. It explores the notion that when individuals use technology, they view it as valuable and beneficial[4]. Moreso, the motivation behind embracing technological innovations lies in people's perception of their usefulness. Additionally, perceived ease of use plays a significant role in influencing technology adoption[5]. Moreover, the adoption of technological innovations like Artificial intelligence is primarily driven by potential user's perception of the benefits they will gain from using the technology. If individuals believe that

a technology will significantly enhance their productivity, efficiency, or overall well-being, they are more likely to embrace it[6],[7]. Therefore, understanding users' perceived usefulness is vital for technology developers and marketers, as it directly influences the technology's acceptance and success in the market. Moreso, Although, perceived usefulness and perceived ease of use are factors that motivates user to adopt new technological innovation such as AI technologies. However, there are some personality traits that influences the human perception to this innovation. Some of these personality characteristics are conscientiousness, and openness of the person. These two were found to influence the both sub constructs; perceived usefulness and perceives ease of use[8]. This background is relevant to developers and users of new technologies, to know those factors that can stimulate the perception towards use, thus motivating them to use technological innovation. When users perceive that AI technology can solve real problems, enhance their performance, enable new capabilities, give a competitive edge, and hold future potential, they are more likely to embrace AI and integrate it into their workflows and practices[9]. For ChatGPT, AI algorithms can assist in research and grant writing[10]. In the education sector, AI-powered personalized learning platforms can cater for individual students' needs.

When users see that AI can significantly improve their performance, they are more inclined to incorporate it into their practices. AI technology often enables capabilities that were previously not feasible or practical. For instance, AI-driven chatbots can provide round-the-clock customer support, which was challenging to achieve with human agents alone. When users recognize the new possibilities AI brings, they are motivated to explore and utilize it to their advantage. In all works of life, librarianship inclusive, the obstructive effect of artificial intelligence is imminent and all encompassing. However, it has come with a almost hundred percent improvement to the manual system. It has the potentials to facilitate effectiveness as well as efficiency is services delivery in libraries and by librarians. Its versatility, and relative

advantages it possesses has been some of the reasons for which AI has enjoyed positive perception from librarians.

The responses to the second research question 'Awareness of Artificial Intelligence among librarians) showed that grand mean" for all items is 3.2, indicating an overall positive perception, comprehension, and projection regarding AI technologies among respondents. Respondents generally have a positive perception of AI, with most believing it is useful for their careers and can enhance their prestige and job performance. However, there is a moderate (2.95) range of perception about AI, with some respondents having limited knowledge. It was asserted that in the case of artificial intelligence technologies, awareness goes beyond merely knowing about their existence. It encompasses the capacity to directly perceive, comprehend, and be cognizant of these technologies, including their purpose and future projections. It is crucial for librarians to have a comprehensive awareness of artificial intelligence, as this technology continues to shape various industries and information management practices. By gaining a deeper understanding of its implications and potential, librarians can adapt and leverage AI to better serve their patrons and enhance their profession. However, to corroborates those findings of this study, research found that academic librarians are well aware of the utilization of AI in university libraries. However, they expressed concerns about potential job losses as a major hindrance to adopting these technologies, despite recognizing the benefits of innovative technologies in enhancing user satisfaction[11]. Furthermore, a study in Pakistan found that librarians in Pakistan are aware of AI technologies and are already utilizing some services based on Natural Language Processing (NLP), such as Google Assistant, Voice Searching, and Google Translate. Additionally, pattern recognition methods, like text data mining, are being used to retrieve library materials and conduct online searches[12]. Moreso, a study in Nigeria demonstrate that Nigerian academic libraries are cognizant of the integration of AI systems in libraries, observing its

global adoption and usage in many academic institutions. However, within the Nigerian context, the integration of AI is not as prevalent[13]. It is therefore, believed that Awareness plays a pivotal role in the successful adoption of any new technological innovation, and this holds true for AI technologies as well. Authors and studies have affirmed that there is adequate knowledge of AI being a major aspect of the 4th industrial revolution. However, the concern of this study is the average perception of librarians as a component of awareness.

The responses to the third research question 'What is the level of digital competency among librarians' The "Grand Mean" for all items is 3.3, indicating a generally high level of digital competence and confidence among respondents. Respondents feel confident in their ability to articulate information needs, locate digital data, judge source relevance, and manage digital content. They also exhibit competence in communication, collaboration, digital content creation, problem-solving, safety, and security in digital environments. The survey suggests that respondents possess a well-rounded set of digital literacy skills and are aware of digital responsibilities and ethical considerations. This complement a study that found that that electronic mailing, internet use, social networking and mobile phones use are the major digital literacy skills amongst librarians[14].

A regional study found that librarians working in university libraries in Africa rated their database search skills, uploading documents to online platforms, skills in using different social media, sending and receiving e-mails skill, digital library development skills, skills in applying new technologies into library services, ability to create different file formats and ability to use open-source software as very high. While, metadata development skills, and library website development skills were rated to be moderate and low. Overall, the librarians rated their level of digital literacy skills possessed to be moderate, and differences emerged between librarians in Nigeria and South Africa with regard to digital literacy skills possessed[15]. It was found that although electronic mailing, social networking, use of PDAs,

mobile phones and internet surfing are the major DLS amongst librarians. However, librarian's level of use of DLS is low[16].

In the 21st century, digital literacy is no longer an optional skill; it has evolved into a fundamental requirement for success in virtually every facet of life. Libraries hold a distinctive position in bridging the digital divide and ensuring that individuals from all walks of life have the opportunity to acquire the essential tools and resources needed to develop their digital literacy skills. Through the provision of technology access, digital materials, and educational programs, libraries play a pivotal role in empowering people of diverse ages and backgrounds to cultivate the competence required to navigate the digital landscape with confidence and effectiveness. As society's reliance on digital technologies continues to grow, the significance of libraries in promoting digital literacy will increase. Libraries function as a crucial element of our digital future by furnishing access and education to all, thereby advocating for digital inclusion on behalf of everyone.

The test of hypothesis one revealed that Awareness of Artificial Intelligence (Perception, Projection and Comprehension) has a significant influence on the motivation to use Artificial Intelligence among librarians among librarians in Edo and Delta States. The study on the strength of this result (Adj. $R^2 = 0.413$, F (1,105) = 75.542, p = 0.000), rejects the null hypothesis one ($H_0 1$) which states that There is no significant influence of Situation Awareness on motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria. This supported by an assertion that awareness of artificial intelligence (AI) among librarians can influence its use in libraries. An article discusses the impact of AI on libraries and the institution of librarianship, arguing that as AI becomes more advanced, people may rely on it more and not seek information from libraries or librarians. Moreover, a survey conducted revealed favorable views of AI technologies among academic and public librarians, with 67% of respondents saying they will change how

libraries operate and 68% indicating a desire for training. The survey also revealed that 21% of librarians were already utilizing AI and related technologies, and 80% anticipated their broad acceptance during the following years[17]. A pilot study by Emerald Insight investigated the level of AI awareness among library leaders, practitioners, and scientists, revealing that there is a need for more training and education on AI in libraries[18]. Another study examined the perspectives of librarians on the awareness and readiness of academic libraries to integrate AI for library operations and services in Nigeria, revealing that librarians have a positive attitude towards AI and are willing to learn more about it[19].

Since AI can significantly reshape employment in the sector, librarians may benefit from a greater awareness of the technology landscape. In summary, the awareness of AI among librarians can influence its use in libraries, and librarians need to be trained and educated on AI to prepare for its integration into library operations and services.

The test of hypothesis two revealed that Digital Competence has a significant influence on the motivation to use Artificial Intelligence technologies. On the strength of this result (Adj. $R^2 = 0.195$, F (1,105) = 26.610, $p = 0.000^b$), this study therefore rejects the null hypothesis one ($H_0 2$) which states that there is no significant influence of Digital Competence on motivation to use Artificial Intelligence among Librarians in University Libraries, Edo and Delta State, Nigeria. This is finding negates previous study titled the "Effect of Technology Readiness, Digital Competence, Perceived Usefulness, and Ease of Use on Accounting Students' Artificial Intelligence Technology Adoption". The study employs a quantitative method, utilizing a questionnaire comprising 44 items. Through convenience sampling, the research obtains data from 152 accounting students studying at universities in West Jakarta, Indonesia. The hypothesized path between Digital Competence (DC) and students' Artificial Intelligence Technology Adoption (AITA) is found to be statistically insignificant. The T-value calculated is 0.746, with a P-value of 0.456, exceeding the accepted threshold of 0.05.

Thus, it concluded that although the respondents professed that they had intermediate and advanced levels of digital competence. However, having high level of digital competence does not necessarily translate to motivation to use artificial intelligence technologies. Nevertheless, it indicated that the respondents will be able use AI technologies well if they choose to do so[20].

The findings of a study revealed that information literacy had a direct and positive impact on the intention to use digital technologies for learning in both Korea and Finland. A higher level of information literacy was associated with a stronger intention to use digital technology for learning, albeit with a small effect[21]. Digital literacy skills are essential for librarians to effectively use AI in their work. Librarians need to build AI literacy, teach AI literacy, improve information organization, analyze digital collections, adapt to new technologies, and promote digital literacy to effectively use AI in their work.

The test of hypothesis three which states that "There is no significant joint influence of situation awareness and digital competency on the motivation to use of artificial intelligence technologies among librarians in Edo and Delta States". The result of the multiple regress (Adj. $R^2 = 0.413$, F (2, 104) = 38.254, p = 0.000), showed that while Situation awareness has significant influence on motivation to use Artificial Intelligence, Digital competence does not have significant influence on motivation to use Artificial Intelligence among librarians in Edo and Delta States. There no studies that combines the influence of both situation awareness and digital competence with regards to their influence on motivation to use artificial intelligence. However, this study bridged the gap by finding that both situation awareness and digital competence separately significantly influenced motivation to use artificial intelligence, however both combined do not.

In summary, situation awareness and digital competence are essential factors that influence the motivation to use AI. They empower individuals to make informed decisions, mitigate risks, build trust, and harness the full potential of AI technologies. As AI continues to permeate various aspects of society, these factors will play a pivotal role in shaping individuals' attitudes and behaviors toward AI adoption and utilization.

Endnote

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Chapter Five

Conclusion

5.1 Summary of Findings

The findings of this study which investigate the influence of situation awareness and digital competence on the motivation to use artificial intelligence technologies among librarians in Edo and Delta States, Nigeria can be summarized as follows;

1. The study found that the motivation to use artificial intelligence technologies is high. This motivation was found to have been greatly influenced by perceived usefulness and perceived ease of use.
2. The study found that there is a high level of perception, comprehension, and projection regarding artificial intelligence technologies. This means that there is high level of awareness of artificial technologies among librarians. However, there is a significant range of knowledge about AI, with some respondents having limited knowledge and others having a high level of knowledge.
3. The study found that there is high level of digital competence among librarians as regards their ability to articulate information needs, locate digital data, judge sources, and manage digital content. They also exhibit competence in communication, collaboration, digital content creation, problem-solving, safety, and security in digital environments. The survey suggests that respondents possess a well-rounded set of digital literacy skills and are aware of digital responsibilities and ethical considerations.
4. The first hypothesis tested found that situation awareness does not significantly influence motivation to use artificial intelligence technologies among librarians in university libraries in Edo and Delta States.
5. The second research hypothesis tested found that digital competence does not significantly influence motivation to use artificial intelligence technologies among librarians in university libraries in Edo and Delta States, Nigeria State

6. The third research hypothesis found that the two constructs of situation awareness and digital competence have positive and significant influence on motivation to use artificial intelligence technologies among librarians in university libraries, Edo and Delta State

5.2 Conclusion

There are several motivations for using artificial intelligence technologies by librarians. AI technologies can enhance search capabilities of library systems, making it easier for users to find relevant information quickly and efficiently, AI technologies can automate repetitive tasks such as cataloguing, data entry, and inventory management, thus giving librarians more time to carry out other complex task; AI technologies can help improve accessibility for users with disabilities by providing features such as text-to-speech, image recognition, and language translation. AI can analyse user preferences and behaviour to provide personalized recommendations for books, articles, or other resources that may be of interest to them; AI technologies can analyse large amount of data to identify patterns, trends, and insights that can be used to improve library services and user experiences. AI technologies can provide assistant to librarians while carrying out research. It is shown in literature that speed, automation and intelligence are also factors which have informed wide adoption of AI technologies. Others are, relative perceived usefulness and perceive ease of use are motivating factors which affect librarians' decision to use AI technologies

5.3 Recommendation

Based on the findings and conclusions reached in this study, the following recommendations are considered applicable;

i. The study shows that the majority of librarians perceive AI technologies as useful for accomplishing tasks quickly and improving job performance. Therefore, it is recommended that libraries actively promote the adoption of AI technologies to enhance productivity.

ii. To maintain the positive perception of AI technologies, libraries should continuously monitor the impact of AI on job performance and productivity. Regular evaluations can help identify areas for improvement.

iii. The study indicates a positive perception of AI technologies among librarians in terms of both usefulness and ease of use. To leverage this perception, libraries should focus on promoting adoption and providing training.

iv. Since most respondents believe that learning to use AI technologies and becoming skilled at them would be easy, libraries should offer training programs and resources to help librarians acquire the necessary skills to effectively use AI tools

v. Libraries should communicate the benefits of AI technologies to librarians who may not yet fully understand or appreciate their potential. Highlight the positive impact AI can have on their daily tasks and address concerns about job security that some librarians may have regarding AI adoption. Provide information and resources to help them understand how AI can complement their roles rather than replace them

vi. Libraries should actively promote awareness of AI technologies among librarians. This includes not only knowing about AI's existence but also understanding its potential applications and benefits in various library functions.

vii. Offer comprehensive training programs to enhance librarians' knowledge and understanding of AI. This should go beyond basic awareness and cover practical applications and implications of AI in librarianship

viii. libraries play a crucial role in equipping librarians with the awareness and digital competence needed to effectively utilize AI technologies.

5.4 Contribution to Knowledge

The study analysis and findings has made significant contribution to theory and practice of librarianship as well the society at large. The contributions are empirical, theoretical and conceptual. The study has made conceptual contribution to knowledge by developing a conceptual model which outlines the constructs of situation awareness theory as well the digital competence framework, highlighting their relationships. This contributes to the theoretical framework of understanding how these concepts relates to motivation to use AI technologies

In theory, the study supports and validates existing theories, specifically, the situation awareness theory (SAT) and digital competence framework, in the context of technology adoption, particularly AI technologies. The study collected and analysed primary data from librarians, adding empirical evidence to support the conceptual and theoretical contributions. This empirical evidence strengthens the validity and applicability of the conceptual model and theoretical framework

5.5. Suggested Areas for Further Studies

Further studies can be carried out on the following topic.

1. Impact of training programs on librarian's situation awareness, digital competence and motivation to use artificial intelligence technologies
2. Influence of organizational support on librarian's situation awareness, digital competence and motivation to use artificial intelligence technologies
3. Comparison of Librarians' situation awareness, digital competence and motivation to use artificial intelligence technologies across different library types

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

Dear Respondent,

I am a Master degree student of the above-named department and institution. I am currently conducting a research work on "Situation Awareness, Digital Competencies and Motivation

to use Artificial Intelligence Technologies among Librarians in Edo and Delta States". I therefore solicit your support in completing this instrument. Please note that any information supplied by you in this questionnaire shall be treated with utmost confidentiality and professionalism.

Thank you for your anticipated cooperation.

Section A: Demographic Information

Instruction: please read carefully and tick below ( ) as appropriate to you.

a. Name of Institution:……
b. Gender: Male ( ), Female ( )
c. Age Range: 18-30 ( ), 31 – 40 ( ), 41 – 50 ( ), 61 and above ( )
d. Educational Qualification: B.Sc. /BLIS ( ); M.Sc. /MLIS ( ); M.Phil. ( ); PhD. ( )
e. Professional Status: Asst. Librarian ( ), Librarian II ( ), Librarian I ( ), Senior Librarian ( ), Principal Librarian ( ), Deputy University Librarian ( ), University Librarian ( )

Section B: Motivation to use Artificial Intelligence Technologies

Instruction: please select the appropriate options as they apply to you

Keys: SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

	Perceived Usefulness	**SA**	**A**	**D**	**SD**
1	Using AI technologies would enable me to accomplish my task quickly				
2	Using AI technologies improve my job performance				
3	Using AI technologies would make it easier to do my job				
4	AI technologies is useful in my job				
	Perceive Ease of Use	**SA**	**A**	**D**	**SD**
5	I believe that interaction with AI technologies would be clear and understandable				
6	I believe navigation of AI technologies would be easy for me				
7	Learning to use AI technologies would be easy for me				
8	It would be easy for me to become skillful at using AI technologies.				

Section C: Situation of Awareness of Artificial Intelligence Technologies

Instruction: please select the appropriate options as they apply to you

Keys: VHE = Very High Extent; HE= High Extent; LE = Low Extent; VLE = Very Low Extent

S\N	**Perception**	**VHE**	**HE**	**LE**	**VLE**
1	I have heard about artificial intelligence technologies				

2	I have heard about artificial intelligence but know nothing about it				
3	I have come across artificial intelligence technologies but know just a little about it				
4	I have come across it and know quite a bit about it				
Comprehension					
5	I am aware of the nature of artificial intelligence technologies				
6	I am aware of what artificial intelligence technologies are used for				
6	I am aware of how to use artificial intelligence technologies				
7	I am aware of the danger and opportunity of using artificial technologies				
Projection					
8	I would find artificial intelligence useful in my career				
9	Using artificial intelligence enhance my prestige as a modern librarian				
10	Using artificial intelligence technologies can boost the speed of carrying out my job				
11	Using artificial intelligence would allow me to be more useful to myself, employer and the users				

Section D: Digital Competence among Librarians

Keys: VHE = Very High Extent; HE= High Extent*; LE = Low Extent; VLE = Very Low Extent;*

S\N	Information and Data Literacy	VHE	HE	LE	VLE
1	I can articulate my information need				
2	I can locate and retrieve digital data, information and content				
3	I can judge the relevance of the source and its content				
4	I can store, manage, and organize digital data, information and content				
Communication and Collaboration					
5	I can communicate and collaborate through digital technologies while being aware of cultural and generational diversity				
6	I can share data, information and digital content with others through appropriate digital technologies				
7	I can participate in society through the use of public and private digital services				

8	I can manage my digital presence, identity and reputation				
Digital Content Creation					
9	I can create and edit digital content in different formats, to express myself through digital means				
10	I understand how copyright and licences apply to data, information and digital content				
11	I know how to give understandable instructions for a computer system				
12	I can modify, refine, improve and integrate information content into an existing body of knowledge to create new, original and relevant content and knowledge				
Problem Solving					
13	I can identify needs, evaluate, select and use digital tools and possible technological responses to solve them				
14	I can use digital technologies to create knowledge and to innovate process and product				
15	I can identify technical problems when operating devices and to solve them				
16	I can support others with their digital competence development				
Safety and Security					
17	I can protect my devices and digital content in digital environment				
18	I can protect my personal data and privacy in digital environment				
19	I am aware of the environmental impact of digital technologies and their use				
20	I am able to protect myself and others from possible dangers in digital environment				

Bio-date

Personal Data

Full Name:	Nosakhare OKUONGHAE
Sex:	Male
Date of Birth:	7th May, 1992
Place of Birth:	Edo State
Nationality:	Nigerian
Language:	Benin
Marital Status:	Single
Name of Next of Kin:	Odion Okuonghae
Address of Next of Kin:	1, John Omoruyi Close, off Imade Street, off Anointed Junction, Ekae, Sapele Road, Benin City, Edo State.
Poster Address:	University Library, Glorious Vision University KM. 1 Ogwa-Ehor Road, P.M.B 001 Ogwa, Edo State
Phone:	09156497843, 07069788101
Email:	nosakhareokuons@gmail.com

Work Experience with Dates

1. **Glorious Vision University, Ogwa** **June 2021- Present**
   Designation: Trainee Librarian
   Job Description:

   - General administration of college of law library
   - Management of the law library collections
   - Cataloguing and classification of legal information material
   - Shelve management
   - Conducting database searches for targeted users
   - Conducting literature search for library patrons
   - Answering patrons' queries

2. **Edo State Board of Internal Revenue** **Nov. 2019 to 2021**
   Designation: Legal Officer/ Compliance
   Job Description:

   - Drafting and perfecting legal documents
   - Adviser on the drafting of agreement and legislations on revenue matters.
   - Drafting of and amendments of relevant tax laws in the State.
   - Monitor compliance activities of other department including Motor Vehicle Administration (MVA).
   - Assisting the Commissioner of Stamp Duties in the administration of Stamp Duties as well Capital Gains Tax in the State.
   - Review the Board's contractual relations and other legal documentation.
   - Making legal representation on behalf of the Board in court
   - Drafting and proffering of legal opinions referred to me by management
   - Performing other duties assigned to me by the management

3. **C. O Ukaegbu& Associate** **Nov. 2017 to Nov. 2019**

Legal Practitioner

Job Description:

- Preparing and filing of legal processes in court
- Oversee the management of all cases in court
- Drafting and reviewing of legal agreements
- Proofreading of all legal documents and instruments emanating from the office.
- Gathering of evidence to be relied upon in legal proceedings
- Sending and reviewing of office e-mails
- Perform other duties as being assigned to me by the principal in Chamber.

4. **Gabriel Oforma & Co** **May 2017 - June 2017**
   Description: Intern
   Job Description:
   - Attending court proceedings with principal in chambers
   - Drafting statutory notices
   - Proof reading legal documents.

5. **Research Assistant** **June 2013 - May 2014**
   Faculty of Law, University of Benin
   Key Responsibilities:
   - Researching on land marks cases by the superior courts of records in Nigeria.

Membership of Professional Bodies

- British Project Management Association 2019
- Nigerian Bar Association 2017

Conference Attended with Dates

1. 59thNigeria Bar Association Annual General Conference held at Eko Hotel and Suit, Lagos State, 23-29 August, 2019.
2. Conference and AGM of the Nigerian Bar Association, Calabar Branch, held at Transcorp Hilton Hall, Cross River State, Calabar, in July 2018.

Names and Addresses of Referees

1. **DR. OMORODION OKUONGHAE**

Head E-library Services,

Glorious Vision University, Ogwa

Edo State.

okuonghaeo@yahoo.com

08112889381

2. **IFEOMA JOY WILSON Esq.**

Commissioner of Stamp Duties,

Edo State Internal Revenue Service,

Edo State.

j.wilson@eirs.gov.ng

08035859678

3. **MR. JAMES ERHABOR.**

University Library,

Wesley University Ondo,

Ondo State.

Jmusii@yahoo.com

07035776976

_____ _____

Signature Date

The University Compliance Certification

This is to certify that this thesis by Nosakhare OKUONGHAE with Matric Number LCU/PG/002840 in the Department of Information Management, Lead City University, Ibadan, has fully complied with the approved university format and style.

_____ _____

Signature Date