Digital Literacy Skill and Facilitating Conditions as Predictors of Motivation- for-acceptance and Attitude-towards-use of Artificial Intelligence by Library Personnel in South-west Universities, Nigeria

Oluwayinka Esther BAIPE
LCU/PG/003160

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In Patial Fulfilment of the Requirement for the Degree of Doctor of Philosophy (PhD) in Library and Information Science

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Certification

This is to certify that **Oluwayinka Esther BAIPE** with matriculation number **LCU/PG/003160** carried out this research work titled "**Digital Literacy Skill and Facilitating Conditions as Predictors of Motivation-for-acceptance and Attitude-towards-use of Artificial Intelligence by Library Personnel in South-west Universities, Nigeria**" in the Department of Information Management, Faculty of Communication and Information Sciences, Lead City University, Ibadan, Oyo State, for the award of Doctor of Philosophy Degree (PhD) in Library and Information Science and that this work has not been previously submitted.

Dr. O. D. Bakare-Fatungase
(Supervisor)

Date

Dr. Sophia V. Adeyeye
(Head of Department)

Date

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Dedication

This study is dedicated to God Almighty and my parents Late Elder John Adeolorunyemi and Late Mrs Victoria Baipe.

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Abstract

The delivery of quality and satisfactory information services in university libraries to technology savvy library users of this era is a feat that cannot be achieved without the use of Artificial Intelligent (AI) technologies support. Digital literacy skills and facilitating condition can foster or hinder the motivation-for-acceptance and attitude-towards-use- of AI by library personnel in this clime of the world. This study thus reconnoitres the digital literacy skills and facilitating conditions as predictors of motivation-for-acceptance and attitude-towards use of Artificial Intelligence by library personnel in South-west university libraries, Nigeria; guided by Technology Acceptance Model (TAM), Theory of Mind (TOM) Skill Acquisition Theory (SAT) and Unified Technology of Acceptance and Use of Technology (UTAUT). Descriptive survey design and a mixed methods research approach was employed for the study. The population of the study consist of six hundred and twenty-two (622) library personnel while the sample size was two hundred and fifty-one (251) library personnel and 12 university library heads. The research instruments used for data collection were adapted structured questionnaire and interview. The questionnaire was used to elicit data from library personnel and exhaustive interview session, using a structured interview guide was employed to elicit information from university library heads. The face and construct validity of the research instruments was ascertained by experts in the field of knowledge. The instrument's reliability was also confirmed at Cronbach-alpha score of 0.845, 0.792, 0.804 and 0.879 for the variables respectively. Questionnaire response and return rate was 98.4%. Descriptive and inferential statistics was used to analyse collected data for the study. Frequency, percentage, and mean were used for the analysis of demographic information and the four research questions that guided the study, while regression analysis was employed for the test of six hypotheses at a 0.05 significance level. Findings of the study revealed that most library personnel in South-west Nigeria digital literacy skills ranges between the advanced beginner and competent stages and have positive attitude towards AI application to library service and professional development. Findings also revealed that digital literacy skill has a high positive correlation with motivation-for-acceptance of AI and moderate positive correlation with attitude-towards-use of AI (Adj. $R^2 = 0.443$, $F(1, 236) = 189.392$, $p < 0.05$). Similarly, facilitating conditions elicit a moderate positive correlation on motivation-for-acceptance and attitude-towards-use of artificial intelligence (Adj. $R^2 = 0.435$, $F(1, 239) = 186{,}080$, $p < 0.05$). Also, the study showed that digital literacy skills and facilitating conditions significantly combined to influence motivation-for-acceptance of artificial intelligence by library personnel. The study concluded that these factors are essential for AI adoption and usage for satisfactory information services delivery and recommended that library personnels upscale their digital literacy skills through trainings and also that university libraries management continually provide facilitating conditions to ensure AI usage for satisfactory information services delivery to library users.

Keywords: Digital Literacy Skills, Facilitating Conditions, Artificial Intelligence (AI), Motivation-for-acceptance of AI, attitude-towards-use of AI, Library Personnel, Nigeria
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List of Acronyms

Abbreviations	Full Meaning
AI	Artificial Intelligence
PEOU	Perceived Ease Of Use
PU	Perceived Usefulness
UL	University Librarian

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Chapter One

Introduction

1.1 Background to the study

Artificial Intelligence (AI) has become an essential part of many contemporary technologies, such as smart devices, social media platforms, Cyber Security Systems (CSS) and more. These machine and robot-like gadgets are electronically controlled computers that mimic the skills, capabilities, aptitudes and proficiencies of the human mind. Its application is evident in every sphere of life, like the education, economy, health and the information services delivery outlets, like university libraries. These technologies promise to make human life much more comfortable because they are programmed to keep records and analyse every action and service they perform or render. Its application in university libraries has great potential for revolutionising the library service delivery system[1].

This was the stance of a study that implied that AI will give library users individualised service experience, increases personnel-users engagement, enhances easy feedback from services received, increase adaptability and interactivity in the digital environment, stimulate evidence- based decision making in libraries and improve the overall performance of the information systems in the library[1]. Regardless of the enormous benefits of AI to library personnel in enhancing effective and efficient service delivery, the personnel's motivation-for-acceptance and attitude- towards-use will determine how well they maximize its potentials. Consequently, how well library personnel deploy AI into library services and operations in achieving the overall objective of the library will be a function of their attitude-towards-use and motivation-for-acceptance of the technology.

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This makes motivation-for-acceptance and attitude-towards-use critical variables to examine in the deployment of AI into the service structure of university libraries and professional development of library personnel. Motivation-for-acceptance and attitude-towards-use of AI by library personnel could be influenced or dependent on the digital literacy skill of the personnel and the facilitating conditions that stimulate personnel towards embracing these technologies [2]. The digital literacy skill level of personnel is a natural motivation to use AI and it also affects attitude positively[3]. Also, when there are favourable working conditions that facilitate the effortless use of technology like AI, library personnel will be generally motivated to accept the technology and imbibe the right attitude towards its use; thus maximising the potential of AI in university libraries for effective and efficient service delivery and professional development of library personnel[2].

University libraries have overtime proven to be the central nerve of their parent institutions because of the essential services they offer. This is because libraries rich in seasoned library personnel and balanced information resources that support teaching, learning and research is regarded as one of the four major structures in tertiary institutions; alongside laboratories, equipment and classrooms/teachers' offices. It could be adjudged that the roles of universities cannot be fully achieved without the existence of libraries that are adequately equipped with soft and printed information materials, Information and Communications Technology (ICT) and its associated facilities. University libraries are expected to play significant sustenance role in any university, satisfy information needs of faculties, students and likewise support teaching, learning and research in ways unswerving in support of the universities' mission, vision and goals. To achieve this, university libraries require both material and human resources; which

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include library personnel who are either librarians or paraprofessionals (library officers/assistants)] saddled with the responsibility of providing variety of library services to patrons such as access to information, references services, social or technical programming as well as instruction on information literacy of library users. These set of library personnel possess university degree(s) in library and information studies/science and can be regarded as information experts while library officers/assistants are paraprofessionals who work with professional librarians to provide access to information for all library users. The services rendered by these personnel to library patrons include the acquisition, processing, storing and dissemination of information in many formats, including books, magazines, newspapers, maps, photographs, graphic materials, electronic resources, audio and video recordings, bibliographies, databases and internet-based resources.

Beyond these, library personnel also provide other information services, which include but not limited to information literacy instruction, computer training and research assistance, Selective Dissemination of Information (SDI) and Current Awareness Services (CAS). The Internet and Information Communications Technologies (ICTs), especially in the Fourth Industrial Revolution (4IR) era, has profoundly impacted and transformed these roles and responsibilities of library personnel even to the point of revolutionising library education and service expectations. This era heralds the development of machineries that has to do with changes in technologies that are connected to digital transformations and the first industrial revolution, started in United Kingdom in the 18th century[4]. It was an era when hand production methods started from 1720 to 1840. In the first industrial revolutions, although libraries increased in size, however, because of the generally witnessed haphazard growth, libraries

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administration became weak and funds for the acquisition tended to be inadequate. As a result, library services were almost non-existent; the positions of the librarians were considered as a part-time job and cataloguing lacked proper methods[4]. The second Industrial revolution can be traced back to early 1850-1914. The Public Libraries Act of 1850 became enacted by the borough in England and Wales to established public libraries in this revolution[4]. The book-stock were increased and opened up to the readers under the second industrial revolution.

The third industrial revolution took place in the 1950s and led to the development of computers and internet[4]. It was characterised by new technologies such as the internet and renewable energies that changed history. During this era, computer became faster and better able to store huge data. The data storage problems in libraries were solved in the era of this revolution. Machine Readable Cataloguing took place in 1966 and got more progression in this revolution[4]. The era also witnessed computer networking and catalogue records with new standardisation; automation became easier, Inter-Library loan and online database searching became prominent and automation factors made libraries more decentralised. Moreover, due to paucity of fund and adequate space for library resources, resource sharing was adopted. Owing to this, libraries became more vibrant by combining together the centralised and decentralised database.

The Fourth Industrial Revolution (4IR) is well-thought-out to be the outcome of the convergence of a number of recent technologies. This is because it mostly depends on the internet to gather information in the ever-growing amount of circulating data; especially as

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the world is fuelled by internet connected devices that are proficient in the collection and processing of large amount of data. This era brought with it hyper automation and as a result expands the range of jobs automation which include not only the highly repetitive low-skill jobs, but also the highly routine medium-skill and some very high-skill jobs (like librarianship)[4]. This is easily achieved given the convergence of a number of recent technologies that characterised the era; which include, but not limited to, generative AI, cloud computing, big data, linked data, 3D printing, biotechnology, Internet of Things (IoT), integration of technology with the human body, Robots and Artificial Intelligence (AI).

The 4IR is mostly focused on AI; which is the science and engineering of creating intellectual machines, specifically intelligent computer programs[4]. In other words, it is the specialised computer science aspect that lays emphasis on the production of computers that can engage in behaviours that are considered intelligent by humans. Simply put, AI is associated with the creation of computer systems that exhibit human intelligence. This includes computer system that are vast in acquiring new ideas and skills, draw useful inferences about happenings, comprehend natural language, understand visual scenes, and systems that perform other deeds that require human intelligence[3]. Artificial Intelligence (AI) can be regarded as the field of study of intelligent devices that can perceive their environment and take actions that will maximise their chances of effectively achieving set goals.

In university libraries context, AI refers to the application and usage of computer systems and computer-based products/programmes and services to deliver library information services, technical operations and facilitate library personnel's professional development.

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Skills in digital literacy and the availability of organisational support and resources (human and non-human), regarded as facilitating conditions in this study, may foster positive motivation-for-acceptance and attitude-towards-use of AI by library personnel and thus bring about its usage for effective and efficient information service delivery to library patrons.

Generally, within the library domain, the use of AI technologies has been averred by scholars to impact the library environment in all ramifications with innovativeness and dynamism to library personnel and library users' interactions with meaningful impact that is unimaginable to library service delivery and professional development[5]. Although AI technologies have been adopted and used for the provision of sustainable library service and professional growth of library personnel in developed countries, university libraries within the Nigerian ecosystem, according to scholars are good in mouthing adoption and usage of these technologies but poor in its applicability to the sustainability of library service[6]. This is mainly due to challenges and disparities that exist across different regions and institutions in Nigeria. Factors such as limited funding, inadequate infrastructure, lack of digital skills, poor motivation for acceptance, resistance to change and negative attitude pose obstacles to the full realisation of the potential benefits of AI revolution in university libraries in Nigeria[6].

It is thus high time library management and personnel realised that if challenges to AI usage in university libraries is not addressed, personnel motivation-for-acceptance and attitude does not change to embrace AI technologies; there is the reality of being archaic, bypassed, and left behind to redundancy as the surge of current trends in librarianship keeps evolving. Artificial Intelligence (AI) impacts on a wide range of disciplines and has also infiltrate libraries through

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natural language processing, text data mining, big data, chatbot and robotics. Artificial Intelligence (AI) impacts technical and user services in the library, in addition to the administration of libraries with its varied activities which more often involves repetitious and time-consuming activities. This might be an impetus for its motivation for acceptance by library personnel which will go a long way in the provision of contemporary library services that fits into the dictates of this technological era.

The motivation-for-acceptance and positive attitude to the application of AI into librarianship provides a number of benefits such as sustainable competitive advantage, lowered cost of acquisition, processing, organisation, storage, professional development and provision of access to information and information resources which in turn adds value to library products and services, and generally improves the worth and self-esteem of library personnel. The introduction of AI applications into libraries is no doubt a change from the old norm. The acceptance of such change starts with the individual end users of the technology, in this case professional and para professional library personnel, because they are the ones that may resist or embrace such change. Hence, the need to bear functionality, user-friendliness, ease of use and usefulness in mind if the goal is a high adoption rate within the library organisation.

The usage of AI in libraries promises to be of great benefits to library personnel and librarianship because all aspects of AI can be applied to the day-to-day activities in the library. For instance, the expert system aspect of AI can be applied to reference services, a foremost service in any library. The expert system can be made to serve as a substitute for reference librarians[6]. Online Reference Assistance (ORA), REFSEARCH, PLEXUS

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POINTER, AMSWERMAN are advisory systems for locating reference resources and factual data without the reference librarian in person. The expert system aspect of AI can also be applied to cataloging which is one of the oldest library techniques. There are two ways artificial intelligence techniques can be applied to cataloging which are through the Human-machine crossing point, where rational tasks are divided between the intermediary and supporting systems; and through an expert system with bursting cataloging competences connected to electronic publishing systems.

Classification is a basic prominent knowledge organisation activity of librarians. The application of expert systems in the field of library classification includes EP-X, Coal SORT and BIOSIS. Indexing of periodicals is another green area where the expert systems of AI are applicable[7]. The motive behind the automation of intellectual facets of indexing is to improve its quality and maintain its consistency. Indexing involves recognition of concepts, translation of the concepts into verbal descriptions, selection and assignment of precise vocabulary terms that conceptually corresponds to the verbal descriptions. Information provided by the indexer can be processed by the expert systems to arrive at appropriate controlled vocabulary to assign to relevant subdivisions. The system can make inferences and it take appropriate action. The 'Med Index' is one of the finest examples of this library indexing system.

The natural language processing and machine learning are other aspects of AI that holds promising benefits to librarians. Natural language processing applies to several disciplines, librarianship inclusive. Its application to the library and information science field of knowledge is reflected in databases such as Online Public Access Catalogue (OPAC). It improves the precision of retrieving relevant documents and also reduces proportions

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of recalls and related files retrieved. Machine learning in library information services delivery is beneficial to the improvement of library metadata generation. It is useful in the generation of Machine- Readable Cataloging (MARC) record; a cataloging standard for bibliographic metadata. Machine learning provides rich collection of probable tools to assist library personnel generate metadata for print and digital resources. It facilitates increased speed of cataloguing for metadata generation and massively improves the depth of subject terms.

Apart from the natural language processing, AI Comprehensive Approach to Printed Material (CAPM) can build a personalized robot for scanning system which allows the browsing of imprints in real time through the web interface[7]. The CAPM system allows a robotic system to open an item and rotate its pages automatically for printing. Although the application of Intelligent Interface of AI, especially to online databases does not resolve the problems of restructuring a database, it rather allows the search-system to make the approach more intelligent. This it does by facilitating the selection of appropriate hosts and databases; allowing users to specify their information need in their own words; determining the level and access to requested information. It also enables adapting information retrieval extent; formulating vocabulary query used in selected databases; expressing search query in the required format; and presenting search results in a helpful way, such as, by year or probability of relevance.

From a practical stance, AI usage in libraries is relatively new and not clearly understood but is now on the threshold of becoming a reality[7]. Several libraries have lately unearthed persuasive benefits of the use of AI, such as the assistance of library systems to deliver more

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benefit to library patrons and personnel. Hence, in order to increase efficiency and effectiveness, libraries employ automation and digitisation of their activities to expand the dimensions of library services and workflows. Artificial Intelligence (AI) techniques give more precision to the automation of libraries services and its acceptance and use in other climes of the world, other than ours, is fast spreading. However, motivation-for-acceptance and library personnel attitude-towards-use of AI is an important key to its use in university libraries.

Acceptance of AI by library personnel, just like every other new technology, can either be welcomed or resisted. Persuading a team to accept new technologies require putting forth compelling vision of what the technologies are and the benefits they can bring. A demonstration of the psychological benefits AI can offer, its simplicity, convenience and efficiency, economic and rational benefits for library personnel and university libraries at large can influence its acceptance by library personnel. To accept AI, library personnel need to understand the need for the acceptance and be able to view it as an improvement from what they had before. Functionality and user-friendliness of AI must be brought to fore if the goal is to achieve high acceptance rate of AI by university library personnel.

Libraries and library personnel can benefit increase in productivity, boost in patronage, better information service delivery, increased professional development, facilitate faster decisions and better policy making via the infusion of new technologies and tools such as AI. Library personnel's acceptance of AI is, therefore, an important factor to consider in AI adoption, implementation and usage within the library organisation. This is because its usage will be determined by the level of the acceptance and attitude towards its use by library personnel. Literature established that both extrinsic and intrinsic motivators have effect on new

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technology acceptance or rejection[8]. Library personnel acceptance of new technology such as AI is directly and indirectly affected by motivators of acceptance such as perceived usefulness, and perceived ease of use. This is because perceived usefulness, and perceived ease of use both have direct and indirect influence on adoption.

Essentially, technology use by library personnel is govern by both intrinsic motivation and extrinsic motivation. Perceived usefulness has been operationalised as an extrinsic motivation and perceived enjoyment as intrinsic motivation[8]. The extrinsic motivation denotes the perception that users would like to carry out an activity because it is perceived to be of influence to the achievement of valued outcomes that are distinct from the activity itself; while the intrinsic motivation is described as the perception that users would perform an exercise for no apparent underpinning other than the process of performing the activity[8]. In the Technology Acceptance Model, two essential factors, which could affect individual technology usage behavior are Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). Whilst PEOU refers to the use of a particular system by an individual being free of arduous effort; PU represents the situation where using a particular system enhances individual job performance[9]. The motivation for acceptance of AI in this study will be measured by the motivational factors: Perceived Ease of Use (PEOU) and Perceived Usefulness (PU).

Perceived Usefulness is the extent to which an individual believes the usage of a particular system would enhance his or her job performance while perceived ease of use denotes to the extent to which a person believes the usage of a particular system would be free of effort[9]. Simply put, PEOU is how easy it is to use a specific technology while PU is how usage of a technology can enhances the life of its users. The success of any new technology adoption is to a large extent based on positive attitudes towards these two measures. Perceived Ease

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of Use (PEOU) means that library personnel find AI technologies usage nor rigid and inflexible, can recover quickly form errors, neither require frequent consultation of manuals nor have to make strenuous mental efforts in using it. Perceived usefulness (PU) implies that library personnel would accomplish task more quickly, have greater control over their work, experience improved job performance, not experience difficulty performing their duties, accomplish more work than would otherwise be possible and reduce time spent in accomplishing tasks.

Artificial Intelligence (AI) PEOU is reflected in features such as prediction of the preferences of users' auto typing, facial features and other AI induced factors. It achieved this by using natural language processing speech recognition and image recognition. Mail auto typing and other new features from google are also creating a better PU for users. Artificial Intelligence can be applied to a number of library activities such as: collection development, descriptive cataloguing, subject indexing, document delivery, reference services and database searching. Artificial Intelligence would no doubt be accepted by library personnel if they perceive it to be easy to use, useful to their day-to-day activities, desirable, and with credible benefits to librarianship and their professional developments. On the contrary, library personnel would not accept to use AI if they do not perceive it to be easy to use nor useful and of benefits to the discharging of their duties and personal development.

The usage of AI in university libraries promises to be of great benefits to library personnel and librarianship, nevertheless, literature have reported a low level of AI use in university libraries in Nigeria[6,7,]. Thus the clarion call for training library personnel on artificial intelligence to facilitate its adoption for effective delivery of libraries services in university libraries[6].There is a general consensus among library scholars that library personnel's attitude do affect the

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implementation and usage of new technologies such as AI in libraries, and ultimately the services offered to the users as well as their professional development[3,5]. The low level of motivation-for-acceptance of AI by library personnel in university libraries may thus be traced to negative attitude towards the use of AI.

The term attitude, in practice, is frequently used as an umbrella expression covering such concepts as feelings, preferences, emotions, expectations, judgments, values, appraisals, beliefs, opinions, principles, and intentions. Attitude refers to relatively lifelong clusters of beliefs, feelings tendencies and behavior directed towards specific persons, objects, groups or ideas. The components of attitude are a function of an individual's salient behavioral beliefs, which represent perceived outcomes or attributes of the individual's behavior. Attitude are held with regards to some aspects of a person's world, such as a physical object, other people, an act, or a policy. Therefore, the way an individual responds to objects or happenings in his or her surroundings is termed attitude.

Attitude has been defined in several light using several insights, such as an ordered and enduring set of feelings and beliefs toward objects and/or situations and a pre-disposition to act or behave concerning it in a particular way[10]. Attitude differ from opinions, values, and beliefs. While attitude and opinions seem to be similar, opinions refer to personal reactions against certain events and situations. Opinions, values, and beliefs differ from attitude in terms of the degree of generalisation and measurement technique. Attitude is measure in terms of being positive or negative. Attitude are more general in terms of their effects on an individual's actions and reactions towards people, idea, place, events or human communities. Most often than not, people are aware of their opinions, while they may not be aware of their attitude.

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Attitude is a psychological tendency conveyed by the assessment of an individual with some degree of favour or disfavour. Psychological tendency refers to a mindset that is internal to a person, while evaluating refers to all classes of evaluative responses, which maybe overt or covert, cognitive, behavioural or affective. These psychological tendencies can be regarded as a type of bias that predisposes an individual mindset towards evaluative responses that may be positive or negative. Attitude stems from evaluative responses to entities on either affective, cognitive or behavioural basis. Evaluative responses, whether covert or overt, represents an individual's attitude towards the object. Attitude refer to an evaluative judgment, either favourable or unfavourable that an individual possesses and directs towards some attitude object(s).

Attitude usually have an attitude objects or target; an individual typically has an attitude towards something, place, event or someone. Objects or target attitude can either be abstract such as technology or concrete like the Internet[11]. Attitude are formed from complex networks related to experiences, knowledge and memories and stored in long term memory of individuals. Attitude is thus a learned pre-disposition to respond in a particular manner with respect to a given object. Attitude can either be positive (favorable) or negative (unfavorable). It can change from positive to negative and from negative to positive depending on happenings or changes around. Individuals are usually typically partial towards those attitude objects for which their appraisal is positive and against those attitude objects for which their assessment is negative[11].

Most often than not, attitude comes in pairs: one conscious and the other unconscious. It is not passive, but rather exerts dynamical impacts on behavior. An attitude is a mental or neural state of readiness, ordered through experience, wielding a directive or dynamic influence on the

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individual's reaction to all objects and situations to which it is related[10]. It can, therefore, be referred to as a tendency to respond to some situations, persons or objects in a particular way or manner. Attitude is an instantaneous evaluation of an object or thought; an affect for or against a psychological object or phenomenon. The objects/phenomenon can be whatsoever a person discriminates or holds in mind such as organisations, places, products, and people. Attitude, thus, represents the positive or negative mental and neural readiness towards a person, place, thing or event. Attitude consists of three components: Cognitive component (Mental, Belief/ Evaluation); Affective component (Neural, Feeling/Emotion); and Conative component (Readiness, Response/ Action).

Attitude towards technology can be described as a person's positive or negative evaluation towards the introduction of new kinds of technology in a workplace[10]. From this definition, it could be inferred that attitude towards the use technology such as AI by library personnel can be described as the stance or disposition of the library personnel towards the use of AI in University libraries. Library personnel's attitude towards the use of AI technology for library services delivery is germane because such attitudes are crucial to the successful implementation of AI technology in libraries. The feelings and disposition of library personnel towards the use of AI is mirrored in their attitude which is usually reflected in their cognitive, affective and conative reactions to the use of AI in university libraries.

The cognitive component of library personnel attitude towards the use of AI is an assessment that constitutes a library personnel's judgment (belief/disbelief) about AI usage. This can be expressed as the information library personnel have about AI that specifically links AI and its attributes. The cognitive component is the storage section where library personnel process and organise gathered information about AI. The affective component refers to emotional reaction

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(like/dislike) of library personnel towards AI. This attitude towards AI cannot be determined by simply identifying library personnel's beliefs alone. This is because emotion works simultaneously with the cognitive process about an attitude object or phenomenon. The conative component is an overt or verbal behavioral tendency of library personnel. It involves actions or obvious responses toward an attitude object. In this case, library personnel's response (favorable/unfavorable) to AI as an attitude target/object.

Everyone, consciously or unconsciously, display either positive or negative attitude towards ideas, objects or innovations. Some library personnel have attitude that propel them along, helping them to deal with new technology like AI, overcome obstacles to its usage and accomplish their objectives. Other library personnel may have attitudes that are anchors; slowing them down or out rightly stopping them from having positive attitude to innovation such as AI and changes in their life and libraries. Positive attitudes towards AI by library personnel will motivate them to capitalise on the opportunities and benefits AI can impact on library service delivery and their professional development[10]. Conversely, negative attitudes towards AI by library personnel will make them dwell on the challenges they may be encountered to be able to apply AI to information service delivery. There is little doubt that the acceptance of AI technologies provides improved opportunities for university libraries. Nevertheless, to harness these opportunities requires positive attitudes from library personnel. This will in turn affect their attitude towards the acceptance of AI. Library personnel with positive attitude to AI will no doubt be favourably disposed to its acceptance in university libraries.

Attitude are most times formed and triggered by happenings, experience, memories availability or absence of needed resources or financial support, exposure and so on. Library personnel's

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negative attitude towards the use of AI, which has in turn affected the acceptance of AI in university libraries in Nigeria, can among other things be associated with the digital literacy skill of library personnel and available facilitating conditions in university libraries in Nigeria [12]. Digital literacy skill is grounded on basic dexterity in information communication and technologies, i.e. the usage of computers to assess, produce, store, retrieve, present and exchange information, communicate and partake in concerted networks using the Internet.

Digital literacy skill is an individual's capability to find, evaluate, utilise; as well as create and share content using the internet and information technologies. It refers to the poise and acute usage of digital technologies for information, communication and basic problem- solving in all spheres of life and encompasses quite a wide range of expertise, all of which are essential to succeed in an increasingly digitalised world. Presently, it plays significant roles in the acquisition and dissemination of information by library personnel. Digital literacy skill is an emerging concept related to variety of abilities and competences. Its scope expands to areas such as technology and computing, media and communication, literacy, information science, and so on. Digital literacy skill composes of understanding digital practices, digitally sourcing information, using information, creating information, and professional engagement of digital resources.

It is understood to cover expertise, knowledge and attitude to use a broad range of digital devices such as tablets, smartphones, and laptops in five systematic stages; which are the novice/beginner stage, advance beginner stage, competent stage, proficient state and the expert stage [13]. The novice/beginner stage is the skill stage of learning the basics, fundamental concepts and specific rules of action of AI usage. Advance beginner stage involves the capability to use complex digital tools such as cloud storage and understand basic

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cybersecurity. The competent stage includes the capability to recognise relative benefits of both situational and context-free features of AI and use the salient features to achieve tasks and also improve performances.

The proficient state critical thinking to understand and use information communication and technologies in multiple formats and knowledge about what technology is, what purposes it can serve, how it works and how it can be efficiently and effectively used to achieve specific goals. Expertise, as a stage of digital literacy skill, refers to the technical fluency that is needed to engage with computers and the internet. This range from basic technical know-how of the use of computer programs such as web browsers, word processors, email and other computer applications to more refined abilities to access and use knowledge resources, such as online databases, search engines and emerging technologies such as cloud computing and AI[13]. The expertise component of digital literacy skill is reflected in library personnel's ability to use and produce digital contents as well as effectively disseminate information through varieties of digital media tools.

The concept of digital literacy covers an array of skills and knowledge necessary to use, evaluate and create digital information contents in different formats. Digital literacy includes data literacy, information literacy, media literacy, meta-literacy and allied capacities for assessing social and ethical matters in the digital world. It is therefore, pertinent that library personnel be digital literates because of their pivotal role in helping library users comprehend how information is shaped and shared in this era across the digital landscape and also for their professional development. Digital literacy is a more recent concept that defines technology-related skills.

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Digital literacy skill is more than just knowledge and expertise. It encompasses the aptitude to meet intricate demands, by mustering and drawing on psycho-social resources; which includes skills and attitudes in a particular context[14]. The digital skills are reflected in an array of diverse competence such as communication, collaboration, critical thinking, creativity, character, citizenship and computational thinking which are developed systematically in five different stages[14]. i.e novice/beginner stage, advance beginner stage, competent stage, proficient state and the expert stage.

Digital literacy skill, just as aptitude to read, write, and speak clearly affects the ability to communicate, enables library personnel to learn, work and communicate information in a digital world. A concrete foundation in digital literacy skill is thus necessary for library personnel as AI continues to evolve rapidly. To develop digital literacy skill therefore, library personnel must be intentional and consciously participate in physical hands-on tutorials, take in online courses, stay current with evolving technologies, attend hands-on webinars on novel digital literacy skill, practice and experiment with different digital inventions and not be petrified nor ashamed to seek assistance.

Digital literacy skill includes being able to use or adapt digital contents for various contexts and library use and the ability to create and communicate with media such as text, images, sound and video. Digital literacy skill is further reflected in library personnel's capability to effectively and responsibly employ Web 2.0 to generate content such as vlogs, blogs and discussion forums; and other forms of social media to generate and disseminate information. The knowledge component is the critical piece of understanding that helps to comprehend, contextualize, and critically evaluate digital media to use and make informed decisions about online data resources[12]. This knowledge helps library personnel recognise how evolving

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technologies affect their perceptions, beliefs, feelings and behaviour towards these technologies[6].

The knowledge component is also reflected in library personnel's information management skills to search, evaluate and effectively use Information Communication and Technologies and the internet to collaborate and solve problems[13]. The attitude component refers to beliefs, feelings and behavior towards digital skill. Digital literacy skill is, usually, not static but transient; they change over time and may involve the use of diverse tools or development of different habits of mind[3]. Given how frequently the media world is evolving, developing and maintaining digital literacy skill would be a lifelong process for library personnel in university libraries in Nigeria. The onus of being digital literacy skilled thus fall on these library personnel. Consistent positive attitude in the development of the technical know-how of emerging technologies such as AI which may range from basic awareness and training to more sophisticated and complex applications will no doubt facilitate the deployment of AI in the day-today information service delivery to library users and professional development of library personnel.

The digital literacy skill of library personnel in Nigerian universities libraries can be assumed to influence their attitude towards the use of AI and its acceptance. This is because the skill, knowledge and technical know-how give confidence of being competent to use emerging technologies. It can thus be inferred that digital literacy competent library personnel would display confidence of being able to use AI in university libraries for information service delivery. These set of library personnel's ability to use emerging technologies like AI would be reflected in their reasoning (cognitive), emotion (affective) and behaviour (conative) towards AI; which will in turn result in a display of positive attitude towards the use of AI for

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effective information service delivery. On the other hand, library personnel that lack digital literacy skill will display negative attitude towards the use AI for effective information service delivery in university libraries in Nigeria.

Similarly, digital literacy skill affects perceived usefulness and perceived ease of use of emerging technologies such as AI[8]. Skill in digital literacy guides perception of AI usefulness and ease of use. Library personnel with proficiency in digital literacy will consider AI to be useful for effective information service delivery and also perceive it to be easy to understand and use. On the other hand, library personnel that are lacking in digital literacy skill will not perceive AI to be easy to understand and use nor consider it to be beneficial for efficient delivery of information service to library clientele in university libraries. Considering the benefits of AI to libraries and librarianship, it is important that library personnel possess at least advance competence in digital literacy skill, especially as their attitude towards AI use and acceptance may to a large extent hinged be on it and facilitating conditions.

Facilitating conditions are supports in form of organisational and technical infrastructure made available by employers to accommodate acceptance and use of technologies[15]. It includes, but not limited to, conditions such as proper training, technology access, and in-house technology expertise training, favourable policy and condition of service, availability of computers, scanners, printers, laptops, standard tables and chairs, access to intranet and the internet. Usually, its availability could exert positive influence on the library personnel's intention to accept new technology. The availability of access to necessary resources, training on required knowledge and provision of required support to use information technology infrastructure, will almost certainly yield positive attitude towards the acceptance and usage of AI by library personnel in university libraries.

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Facilitating conditions further refers to the degree to which library personnel perceive that university libraries organisational and technical infrastructure required to use an intended system are available. These are factors in an environment that make the use of new intended systems possible and are largely determined by indicators such as perceived behavioral control and compatibility. The effective use of new intended systems such as Artificial Intelligence by university libraries hinges on the availability of both human and materials organisational resources as well as appropriate technical infrastructure essential for their optimal performance. This implies that the extent to which library personnel in university libraries believe organisational resources and technical infrastructure exist to support the effective use of AI could determine their attitude towards its use and acceptance.

Today, the demands of librarianship dictate that library personnel be conversant with the use of sophisticated technologies and tools to fulfill their job requirements. Libraries all over the world are, therefore, upgrading and equipping their organisational structure and technical infrastructure with a view to effectively motivate library personnel to embrace technologies relevant to effective information services delivery purposes[15,16]. This is because facilitating conditions, in many libraries, is now being recognised by university libraries administrators and library personnel as one of the crucial drivers to the improvement of library services and products. It is thus pertinent that conditions that can facilitate the use of Artificial Intelligence by university library personnel be put in place by the university libraries management.

Availability of facilitating conditions can help remove obstacles to AI use by library personnel. For instance, the provision of computers, intranet and the internet, will influence the cognitive, affective and conative components of library personnel's attitude towards the use of

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AI. These facilitating conditions would also influence the perceived usefulness and perceived ease of use of AI for efficient and effective delivery of information service by library personnel to library patrons.

Hence, it is advisable for university library management to provide library personnel with good organisational structure and technical infrastructure to facilitate positive attitude towards the use and acceptance of AI for effective information service delivery in university libraries in Nigeria. Good facilitating conditions tend to increase acceptance of and attitude towards the use of a technology while poor facilitating conditions brings the opposite. Poor facilitating conditions should therefore be improved upon by university libraries management to facilitate motivation-for- acceptance and positive attitude towards the use of AI in university libraries and ultimately achieve better information service delivery by library person.

Digital literacy skill and facilitating conditions can improve library organisational and developmental ideas by introducing a new paradigm which has strong implication on the motivation-for-acceptance and attitude towards the use of AI. Digital literacy skill and facilitating conditions, to a very large extent, can influence the realisation of the 21 st century university libraries. Alongside digital literacy skill of library personnel in university libraries, facilitating conditions, which denotes the logistics and technical aids needed to use a particular technology, plays important roles in library personnel's attitude towards the use and acceptance of AI in university libraries. Facilitating conditions as well as digital literacy skill of library personnel should therefore be of paramount concern to university library administrators as well as the University management.

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1.2 Statement of the Problem

The library has severally taken up challenges to ensure the continuity of services expected of it by its users who are mostly technologically savvy. Although the outside world has always viewed libraries and her personnel as foremost in the pursuit and adaptation of innovations, observation has shown that university libraries and library personnel in Nigeria are experiencing a slow uptake in the use of artificial intelligence which might be due to library personnel's lack of motivation-for- acceptance and negative attitude towards the use of artificial intelligence. Fuelled by poor digital literacy skill and inadequate facilitating conditions in addition to the negative attitude of library personnel towards the usage of artificial intelligence for effective information service delivery and their professional development[2]. Which can ultimately hinder the fulfilment of university libraries obligation of supporting teaching, learning and research.

Significantly, the level of interest regarding motivation-for-acceptance and attitude towards the use of artificial intelligence in libraries has grown globally, however, little or no interest has been shown by the university libraries in South-west, Nigeria. Furthermore, there is a dearth of literature and empirical research regarding the attitude of library personnel towards the use and acceptance of artificial intelligence in university libraries and the possible predictors (such as digital literacy skill and facilitating conditions) as indicated in literatures[12,15]. Indeed, not much has been done to either empirically or conceptually address the influence of digital literacy skill and facilitating conditions on motivation-for-acceptance and attitude towards the use of artificial intelligence in university libraries in Nigeria. Hence, the need for this study especially as it relates to Nigerian context.

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1.3 Aim and Objectives of the Study

The aim of this study is to investigate digital literacy skills and facilitating conditions as predictors of motivation-for-acceptance and attitude towards use of artificial intelligence by library personnel in universities in South-west, Nigeria.

The objectives are to:

i. identify the level of motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria;
ii. determine the attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria;
iii. identify the level of digital literacy skills of library personnel in universities in South- west, Nigeria;
iv. identify the facilitating conditions available to library personnel in universities in South-west, Nigeria;
v. determine the influence of digital literacy skills on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria;
vi. determine the influence of digital literacy skills on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria;
vii. determine the influence of facilitating condition on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria;
viii. determine the influence of facilitating condition on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria;
ix. determine the combined influence of digital literacy skills and facilitating conditions on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria; and

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x. determine the combined influence of digital literacy skills and facilitating conditions on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria.

1.4 Research Questions

The study, therefore, seeks answers to the following research questions derived from the objectives:

1. What is the level of motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria?
2. What is the attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria?
3. What is the level of digital literacy skill of library personnel in universities in South-west, Nigeria?
4. What are the facilitating conditions available to library personnel in universities in South-west, Nigeria?

1.5 Hypotheses

The following null hypotheses guide the conduct of this study and were tested at 0.05 level of significance:

$H_0$1: There will be no significant influence of digital literacy skill on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria.

$H_0$2: There will be no significant influence of digital literacy skill on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria.

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$H_0$3: There is will be no significant influence of facilitating condition on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria.

$H_0$4: There will be no significant influence of facilitating condition on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria.

$H_0$5: There will be no significant combined influence between digital literacy skill and facilitating conditions on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria.

$H_0$6: There will be no significant combined influence between digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria.

1.6 Significance of the study

This study is of significance in the area of practice of librarianship and of immense benefits to all categories of stakeholders; university management, library administrators, library personnel, library users, researchers and the society at large, who have a direct or indirect link with university libraries in Nigeria. Findings from the study would provide adequate information on the motivation-for-acceptance of Artificial Intelligence (AI) of library personnel in university libraries in South-west, Nigeria. It will also provide information on the attitude- towards-use of AI by library personnel for operations towards the achievement of the goals and objectives of University Libraries to support teaching, learning and research; and how these are influenced by library personnel digital literacy skill and facilitating conditions.

The study would be of immense benefits University libraries as it would assist university libraries management on the formulation of policy and regulations that will favour the course of

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the acceptance and usage of AI by the employment of different ways to ensure the improvement of the digital literacy skill of library personnel. It will also guide university administrators in the provision organisational resources to facilitate AI usage and ensure available facilitating conditions are good enough to induce positive attitude and motivate library personnel to accept the usage of artificial intelligence for all library operations. Findings from the study is also expected to guide university administrators on the provision of organizational structure and technical infrastructure for better information service delivery in the university libraries. Outcomes from the study are further expected to guide library personnel on the need to acquire relevant digital literacy skill in order to effectively use artificial intelligence for all library operations. Discoveries from the study is also expected to improve library users' experience of information service delivery, thereby benefiting the society at large.

The study holistically examined all components of attitude towards the use of artificial intelligence to determine which of the components contribute to the acceptance of artificial intelligence. It will also study the influence of digital literacy skill and facilitating condition on attitude towards use and acceptance of artificial intelligence. This will contribute to the body of literature and reduce the dearth of literature in this area, especially as attitude has hitherto been studied in parts. Thus, serving as benefit to researchers. Findings of the study will benefit library personnel by bringing to fore their strengths and weaknesses thereby assisting them to know areas improvement which will translate to better and more satisfactory information services delivery to library users .The findings of this study will, thus, be significant and of immense benefits to all categories of stakeholders who have a direct or indirect link with university libraries and also beneficial to researchers and scholars who might want to carry out further studies in this area.

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1.7 Scope of the Study

This study aims at investigating the digital literacy skill and facilitating conditions as predictors of motivation-for-acceptance and attitude towards use of artificial intelligence by library personnel in universities in South-west, Nigeria. For the dependent variables, the constructs to be studied under motivation-for-acceptance are Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) while the focus under attitude-towards-use of artificial intelligence are cognitive, affective and conative. For the independent variables, the focus under digital literacy skill of library personnel in South-west universities, Nigeria are novice, advanced beginner, competent, proficient, and expert skill stages while the focus under facilitating condition are organizational support and organizational resources segregated into human resources (trainers in the use of artificial intelligence) and non-human resources (organisational infrastructure). The study focuses on the states in South-west geo-political zone of Nigeria. These are Ekiti Lagos, Ogun, Ondo, Osun, and Oyo States. It is limited to university libraries heads; librarians and para- professional who are known as library Personnel. These form the study respondents as they are expected to employ the use of artificial intelligence for the provision of information service delivery in university libraries and also harness their expertise to give pertinent information on the issues being investigated. The study population covered federal. state and Private owned universities in South-west Nigeria. This is because a study of this nature is needed to be conducted holistically and comparatively among all the types of universities according to ownership in this geographical zone.

1.8 Limitation to the Study

The completion of this study was not without challenges, hurdles and constraints that could have hampered the successful completion of the study. Constraints encountered while embarking on this study include reluctance on the part of some respondents in the university

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libraries used for this study to volunteer information. Also, securing appointment with university library heads, due to the busy nature of their work and tight itinerary, was quite a task. These hurdles and challenges were crossed and surmounted through perseverance and patience.

1.9 Operational Definition of Terms

The following recurrent terms used in the study are hereby operationally defined in the context of this study**:**

Motivation-for-Acceptance of AI: This refers to those stimuli that propel library personnel in South-west universities, Nigeria to embrace the use of AI for information service delivery.

***Perceived Ease of Use*:** The degree to which library personnel in South-west universities, Nigeria believe that using artificial intelligence would be free of effort.

Perceived Usefulness: The degree to which library personnel in South-west universities, Nigeria believe that using artificial intelligence would enhance his or her job performance.

Attitude-towards-use of AI: This refers to the positive or negative mental and neural readiness displayed by library personnel in South-west universities, Nigeria towards the use of artificial intelligence in university libraries.

Cognitive Attitude: This is the behavioural tendency or disposition of library personnel in South-west universities, Nigeria to act in a certain way toward the use of AI.

Affective Attitude: This is the component of attitude that relates to the feelings or emotions which shapes the character of library personnel in South-west universities, Nigeria

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towards AI.

Conative Attitude: This implies the inclination of library personnel in South-west universities, Nigeria to act on the basis of both current discernment and emotional feedback.

Digital Literacy Skill: This refers to the ability of library personnel in South-west universities, Nigeria to properly use and evaluate digital resources, tools and services.

Novice Stage: This is the skill stage of learning the basics, fundamental concepts and specific rules of action of AI usage in university libraries by library personnel in South-west universities, Nigeria.

Advanced Beginner Stage: This is the skill stage where library personnel in South-west universities move beyond the exclusive use of information processing as a result of their experience with AI.

Competent Stage: This is the skill stage where library personnel in South-west universities develop capability to recognise the relative benefits of both situational and context-free features of AI and use the salient features to achieve tasks and also improve their performances.

Proficient Stage: This is the skill level of proficiency where library personnel in South-west universities can recognise almost immediately a large repertoire of AI and can determine the move that will best achieve library goals.

Expert Stage: This is the skill level of proficiency where library personnel in South-west universities can make more refined and discriminations in AI usage and application to library service delivery than a proficient performer.

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Facilitating Conditions: Facilitating conditions relate to the availability of organisational support and resources necessary for AI adoption and usage by library personnel in South-west universities, Nigeria.

Organisational support: This refers to the provision of benefits, such as, financial assistance, provided by university/university library management, for AI adoption and usage by library personnel in South-west universities, Nigeria.

Organisational resources: This refers to both human (AI usage trainers) and non-human (organisational infrastructures such as computers) resources provided by university/university library management, for AI adoption and usage by library personnel in South-west universities, Nigeria.

Artificial Intelligence (AI): This refers to machines/computers that displays traits associated with human mind employed by library personnel in South-west universities, Nigeria for library procedures and provision of various information services.

Library personnel: These are professionals (librarians) and paraprofessionals (library officers) working in university libraries in South-west, Nigeria.

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Chapter Two

Review of Related Literature

This chapter focuses on the review of literature related to the study in order to facilitate explicit understanding of the subject matter. For better understanding, the review is made under the underlisted sub-headings.

2.1 **Conceptual Review**

2.1.1 Motivation-for-acceptance of Artificial Intelligence

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2.2 **Theoretical Framework**

2.2.1 Technology Acceptance Model (TAM)

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2.3.2 Facilitating Conditions and Motivation-for-acceptance of Artificial Intelligence

2.3.3 Digital Literacy Skill and Attitude-towards- use of Artificial Intelligence

2.3.4 Facilitating Conditions and Attitude-towards-use of Artificial Intelligence

2.4 **Conceptual Model**

2.5 **Summary of the Literature Reviewed**

Endnotes

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2.1.1 Motivation-for-acceptance of Artificial Intelligence

The 21st Century libraries have witnessed great technological innovations which have caused their personnel to continuously adapt to the utilization of emerging technologies. One of the most recent of such technological innovation that has engulfed the library ecosystem is Artificial Intelligence (AI). Artificial Intelligence (AI) amongst other digital technologies appears to have interrupt the global space in science generally (medicine, engineering, aviation and so on), education and business in present era. This technology, which is sometimes, also called Machine Intelligence is not at all natural but entails the development of computer programs to complete tasks that require human intelligence[1]. The concept of AI has thus tilted conventional library towards becoming smart libraries or intelligent libraries.

The concept of smart libraries connotes the deployment of AI tools to enhance discovery on behalf of their users[2]. By implication, libraries that aim to satisfy their users, who are tech-savvy, are expected to utilize AI for optimum service delivery. This is because user-centrism is fundamental in the value-chain of information service delivery by library personnel in this present era of digital connectivity[3]. However, for AI to yield optimal result in library service delivery it must be deployed by library personnel[4]. The library's personnel's intention to use AI is predicted by several factors including their level of Motivation-for-acceptance of AI. Artificial Intelligence refers to machines that displays traits associated with a human mind such as learning, assimilating and problem-solving.

This is not far-fetched because AI is the simulation of human intelligence into machines so as to make them think like humans as well as mimic humans' actions. As a branch of computer science,

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it is sometimes referred to as “Machine Intelligence” which is meant to depict intelligence exhibited by machines in disparity to natural intelligence displayed by humans. The Artificial Intelligence expression was introduced as a digital replacement for the analog cybernetics[5]. It embodies the dual purpose of advancing basic scientific understanding and making computers more sophisticated in their use by humans. Artificial Intelligence (AI) is a broad and complex field of study that can be perplexing for non-specialists to comprehend; especially as it depends on and make use of algorithmic techniques to tackle problems using symbols.

Artificial Intelligence (AI) relies on the skill of mapping symbols. It is concerned with the conception and procedures of symbolic readings by computer and the symbolic representation of knowledge to be used in drawing inferences. It is also concerned with the comprehension and execution of intelligent tasks such as learning new skills, reasoning, adapting to new situations and solving problems by computers and machines, via the combination of computer science, psychology, and philosophy. Artificial Intelligence (AI) technologies and applications are grounded on machine learning algorithms, which at their most basic are nothing more than recipes, or instructions, that direct computers on how to complete given tasks[6].

It is a branch of science concerned with helping machines find solutions to intricate problems in a more human-like manner which generally involves appropriating and relating features from human intelligence as algorithms in a computer friendly manner. Tasks that are well-defined in a set of processes can thus be automated with the use of algorithms. Collectively, algorithms are occasionally referred to as robots. Search engines on the Internet mainly use algorithms which are known as crawlers, bots, spiders, or to mine websites and knowledge bases, building enormous

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indexes with the information that is accessed[7]. This reveals that the Internet runs on algorithms and all online searching is accomplished through them as depicted in figure 2.1.

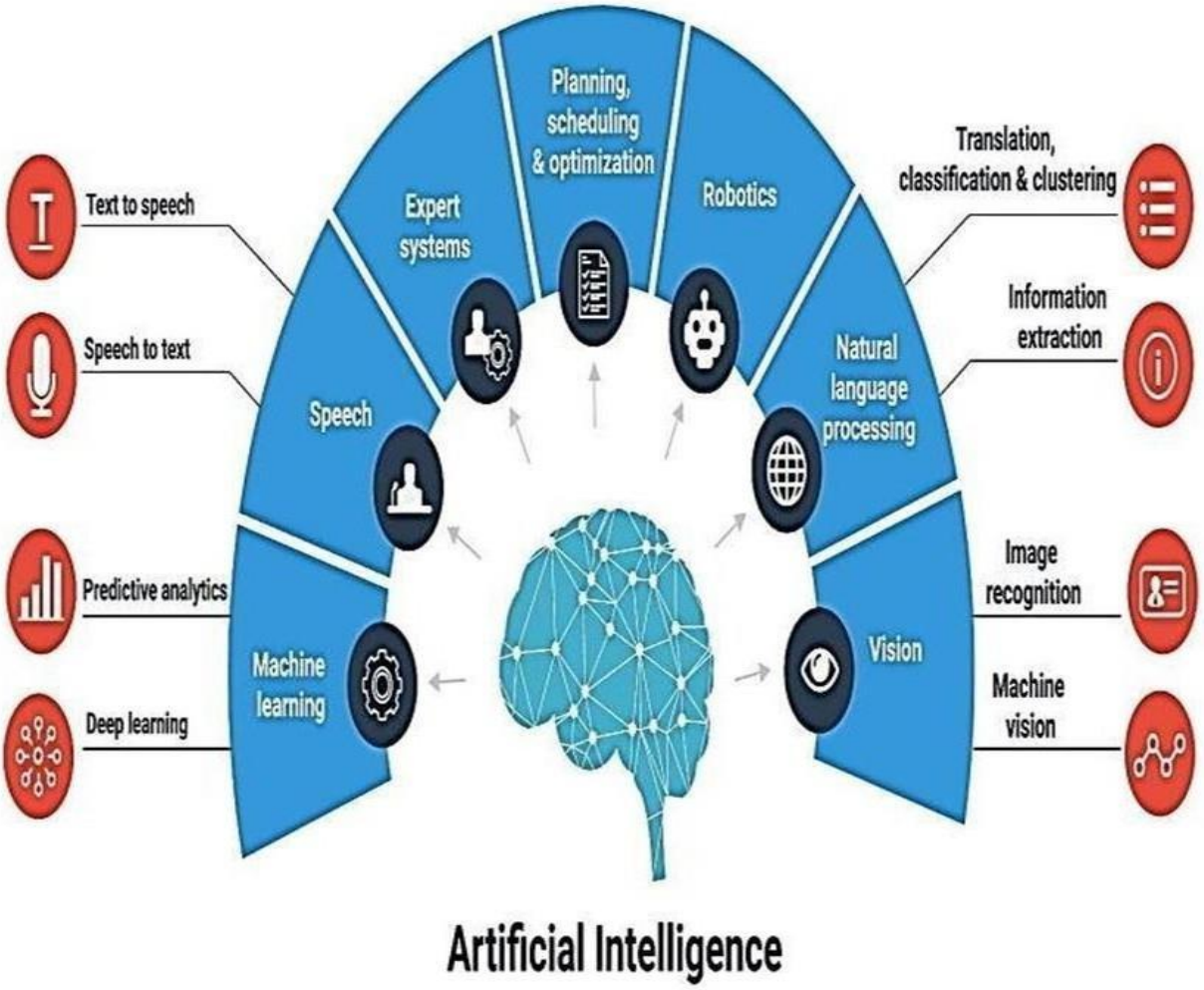


Figure 2.1: Pictorial diagram of AI Components
Source: [9]

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Concisely, AI is the science of giving human wisdom to machines and computers to enable them act intelligently. AI involves different areas which are in not in any way detached from one another and in most intelligent systems, two or more AI techniques could contribute to solving a problem at the same time. Researchers have noted that AI involves the areas of researches such as, expert

system, pattern recognition robotics, natural language processing and machine learning[6;7]. Expert System is a computerised knowledge based system which plays the role of intelligence interface and serves as gateway for the provision of access to databases and the retrieval of relevant information. As a computer programme, it offers expert advice, and recommends solutions for given situations. The different components of expert systems include knowledge base, inference engine, and user interface[8].

The natural language processing is that which allows a computer to appreciate the main linguistic concepts in a question or solution. Its goal is to design and build computers that analyse, understand and generate natural human language. Speech synthesis, information recovery, linguistic approaches, information extraction, machine translation and speech recognition are all different components of natural language processing[8]. Pattern recognition, as an area of AI, is a procedure that establishes close matching between new stimuli and previously stored stimulus patterns. The components of pattern recognition, in sequential order, includes data acquisition, pre-processing, feature(s) extraction, model selection and training, and evaluation[8]. Aside from library and information science field of study, AI is studied and used in many other fields such as cognitive science, ethology, informatics, psychology and computer science. Artificial Intelligence is indeed another breakthrough in technology advancements.

The application of AI by library personnel to information service delivery offer university libraries the opportunity to adjust emphasis and attention. Artificial Intelligence offers useful alternative to information service delivery in university libraries that produces better outcomes. All over the globe, libraries strive to position themselves to embrace the advantages of the application of cognitive computing in general and AI in particular for their probable utility, as implement capable of refining

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the quality of university library services[9]. The possible deployment of AI in university libraries for information services delivery include but not limited to the application of Expert System in Acquisition, Indexing, Cataloguing, Classification, Reference Services, Pattern Recognition (PL), Natural Language Processing (NLP) and Robotics in library activities; all of which are capable of stimulating the Motivation-for-acceptance by library personnel in university libraries, especially in South-west universities in Nigeria.

The application of Expert System to acquisition of both print and non-print information resources involves AI assistance with collection development. Several systems have been integrated to achieve this. One of which is the Monograph Selection Advisor (MSA), a pioneering effort in applying AI to the collection development area of library science. The knowledge-base is wide-ranging and the interface aspect easy to obtain the desired information from the machine. Indexing of periodicals is another area where AI expert systems can be deployed in university libraries to advance indexing consistency and quality. The system, based on provided information by the indexer, can draw inferences and based on drawn inferences, supply appropriate preferred terms to automatically assign relevant subdivisions. 'Med Index' is the best example of indexing system used in the library Indexing activity[9].

There are two approaches for applying AI techniques to cataloguing, known as the oldest library crafts. The first is the human-machine interface, where the intellectual effort is shared between the intermediary personnel and the support system; while the second is the use of an expert system with full cataloguing capability linked to electronic publishing system to ensure generated on-line text are passed through knowledge-based systems and cataloguing process done without intellectual input from an intermediary[9]. Another aspect of information service delivery in university libraries that AI can be deployed is information resources classification. Classification

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is a fundamental activity in the organisation of knowledge. And thus, important in all systems for organising knowledge in libraries. The application of Expert System in the area of classifications in university libraries includes Coal SORT, Environmental Pollution Expert (EP-X), BIOSIS.

Coal SORT is a conceptual browser designed to serve both as a search and an indexing tool. It primarily consists of a frame-based semantic system and the software that allow users display portions of it and also navigate its conceptual structure. The EP-X is similar to Coal SORT in that both concentrate on enhancing interface using a knowledge-based approach. The knowledge base of EP-X comprises of hierarchical frame-based semantic network of concepts and the pragmatic relationship among concepts, that is a, set of template that expresses the patterns[10]. BIOSIS, designed as an indexer aid, uses knowledge-based devices and a substantial amount of procedural knowledge that automatically classify information resources to different categories. The indexing languages are well structured and of practical representation that can stimulate motivate-for-acceptance of AI by library personnel in university library due to its advantages.

Another deployment of AI in university libraries that can stimulate the Motivation-for-acceptance by library personnel is the applications of Expert Systems to one of the dynamic services rendered in university libraries; Reference Services. These applications include the use of expert system such as Pointer, Research, Answerman, PLEXUS and Online Reference Assistance (ORA). Pointer, known as knowledge-based system, acts as computer assisted reference program that directs patrons to reference sources while Research is a designed system that provides library patrons with recommended sources to consult in order to find answers to their queries or bridge their information gap. It is also system that is capable of teaching reference skills or computerized aid for practicing reference librarians and other library personnel. Answerman is a knowledge-

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based system that aid library users in sourcing answer to reference questions on topics of agriculture. It has series of menus that narrow down the subject of the questions and function as a consultation system.

PLEXUS is a referral tool employed in libraries; it embraces knowledge about the reference process and information retrieval while Online Reference Assistance (ORA) is a system projected to inspire the need of reference librarian for queries of low and medium level by library users through the use of AI technologies such as computer assisted instruction modules videotext like database, and knowledge-based system. ORA also entail of directional enquiries like provision of library locations, services and policies. The application of Pattern Recognition in library activities such as multimedia systems, digital libraries, collaborative computing and geographic information system as well as the applications of Natural Language Processing (NLP) to library activities which can be applied to the information retrieval aspect of field of library and information science, especially in the area of searching database such as Online Public Access Catalogues (OPAC) are mean of incorporating AI into university libraries for a better information service delivery which may kindle the Motivation-for-acceptance of AI by library personnel.

Also, the use of Robotics for library activities and information service delivery can also achieve this feat. Robots are automatically controlled, reprogrammable, multi-purpose manipulator programmable in three or more axes which may be either fixed in place or mobile for use in automation applications[9].These robots can welcome users to libraries, answer direction reference queries and with the use of in-built scanners, optical character recognition (OCR) software and indexing software as programmed by the Comprehensive Access to Printed Material CAPM system allow for browsing of images of text and also for searching and analysing full-text

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generated from the images.

Indeed, motivation to use new technological innovation such as AI, with its attendant advantage to all aspect of library service delivery, is a key factor to consider when examining the implementation and use of emerging technological innovations within the library space[11]. Motivation is the internal state that propels people to achieve their basic or fundamental needs and drives them to take action; and they are usually hedonic and utilitarian motivations[12]. They thus predict human behavior within a given context, like the tendency to accept AI within the context of library service delivery. Hedonic motivation is considered as the pleasure or enjoyment that people derive from using a particular technology[12,13]. Whereas, utilitarian motivation is the acceptance and use based on rationale and necessity; or based on the functional value of the technology[14,15]. The concept of Hedonic motivation (HM) has been used to explain intrinsic drivers, comprising of enjoyment and pleasure, associated with adoption and use of AI[16]. What motivates people including, library personnel, to use AI is an important issue of consideration[17].

Motivation generally is what propels people to act or behave in a certain way. It is what propels an organization member to be willing to carry out a task that is assigned to them and accomplish their responsibilities[18]. The motivational factor as one of the factors that predict library personnel's use of technologies like AI has been proposed by certain models including The Unified Theory of Acceptance and Use of Technology (UTAUT). The Model establish that for people to use technologies such as AI, they must have a motivating reason which could be as a result of the fun or pleasure they will derive from using the technology[19]. This plays a crucial role in determining the acceptance and use of that technology. By implication, the perceived level of fun or pleasure (culminating into motivation) that library personnel will enjoy in using AI will directly determine

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their acceptance of the technology. While this appears to be a positive angle towards Motivation-for-acceptance of AI, it is also tenable that the basis for librarians' motivation to accept and use AI could be borne out of fear.

It is thus noteworthy also that librarians' motivation to engage with AI could vary from techno-optimism to techno-phobic tendencies[20]. This negative motivation like the fear that AI will soon takeover humans' livelihood could invariably become a Motivation-for-acceptance of AI by the library personnel. Aside perceived usefulness and perceived ease of use, the UTAUT model explains also that possible motivation to adopt AI in an organisational context include facilitating conditions and social influence[21]. Facilitating conditions refers to indicators that measure the degree to which a person believes that the organizational and technological infrastructure is in place to enable the adoption of a system or technology[22]. These facilitating conditions are considered to have a positive relationship with individuals' intention to use AI[23].

Thus, people will be extrinsically motivated to accept AI when the required facilities and enabling conditions are provided. Social influence which reflects people's perception of technology as influenced by their social environment invariably serves as a motivation for library personnel to accept the deployment of AI in libraries[24]. As part of social influence motivation to accept AI, the disposition of library leaders and their leadership style can determine library personnel's acceptance to use AI for service delivery. This is in line with study that shows that the implementation of AI in academic libraries and the tendency of personnel to use it will be significantly a function of leadership style, as transformational leaders have would motivate better motivate personnel towards the use of AI in libraries[25].

The benefits that AI brings to the 'table' or avail academic libraries are considered as another

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Motivation-for-acceptance of AI among library personnel. As civilization shaped the library service delivery ecosystem, characterized by high influx and adoption of technology, library personnel are now utilizing technology be stay relevant in the scheme of things[26]. Library personnel's perception of the enormous relevance of AI and endear them to accepting this innovative technology. Some of the identified benefits are creating new services, streamlining workflows and enhancing operational efficiency[27]. Moreover, AI helps libraries to revamp their service structure and promote their relevance in the present day digital world[28].

All of this relevance contributes to the assumption that that library personnel perceive value for AI could motivate them towards using it, which is in line with the Technological Acceptance Model (TAM); consequently, a positive change in perception about what AI is to libraries and can become could motivate-acceptance among library personnel[29]. The TAM as a technological model proposes an explanation for the Motivation-for-acceptance of AI. The model suggests that the degree to which AI would be useful to a particular task (perceived usefulness) and the degree to which it would be free from efforts (perceived ease of use) are motivations for people to accept and use AI[30]. Thus, library personnel will be motivated to use AI for information service delivery when they feel it is useful to achieve their task and would not be stressful using it.

This has implication for the training requirement of personnel in a bid to position them for AI deployment and utilization. It follows that when they are trained and equipped, they will be motivated to explore the world of AI for better service delivery. While TAM considers extrinsic motivation (perceived ease of use and perceived usefulness) as factors that determine acceptance of technology, it ignores intrinsic motivations or inhibiting factors which also affects acceptance of technologies like AI[31]. A study thus suggests a balance between extrinsic and intrinsic

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motivation towards stimulating library personnel's acceptance of AI for information service delivery[31]. Indeed, some other libraries are harnessing this for operational and service-oriented aspects[32]. Moreover, library personnel will use AI when the necessary facilitation conditions are available to them[16]. These facilitating conditions serve as a reinforcing factor that motivates them towards acceptance of AI.

2.1.2 Attitude-towards-use of Artificial Intelligence (AI)

Attitude connotes an individual's feelings, beliefs, and predispositions towards an object, a person, or situation. It is regarded as a complex mental state of beliefs, emotions, and cognitive processes that contour individual perception, tolerance and interaction with the world. Attitude refers to the relatively but enduring evaluation of something, where the something is called the attitude object; the attitude object might be a product, a person, or a social group[33]. Attitudes are evaluations that involve a preference for or against the attitude object, commonly expressed in terms such as like, dislike, prefer, hate, and love[33]. Research has found that some attitudes are inherited, at least in part, via genetic transmission from our parents while other attitudes are learned mostly through direct and indirect experiences with the attitude objects[34].

Attitudes can be positive or negative and can be formed through social interactions, various experiences, and individual personality traits[35]. Attitude influences our lives in several ways. It plays significant role in human decision-making process, as it influences how individual perceive and appraise risks, options, and rewards[33]. Attitude impacts behaviour and actions, shaping interaction with others, approach to challenges, and pursue of goals. A positive attitude can motivate constructive actions, while a negative attitude may lead to destructive behaviours. Attitudes can also shape interpersonal relationships, foster trust, cooperation, and empathy, or lead

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to misunderstandings, conflicts, and negative sentiments. It can impact emotional state, positive attitudes contribute to feelings of happiness, contentment, and optimism, while negative attitudes may lead to stress, anxiety, and depression[35].

Attitude towards work, learning, and personal growth can significantly affect work performance and achievements. A positive attitude can enhance motivation, creativity, and resilience, while a negative attitude may hinder progress and limit opportunities. Attitudes are made up of cognitive, affective, and conative (also known as behavioural) components[33]. The Three-Component Attitude Theory, known as Theory of Mind (TOM) combines personal elements and object to offer an overview of the structure of attitudes, was first propounded by Rosenberg and Hovland in 1960[36]. The American psychologist, Albert Ellis, with the application of psychology to attitude theory, advanced the Affective-Behavioral-Cognitive (ABC) Model of Attitude. The ABC model describes attitudes as a combination of cognitive, affect and behavioural inclinations[37].

A modification was made to this concept as the Cognition-Affect-Conation Pattern (CAC) by Fishbein and Ajzen in 1975; with a claim that a person's cognition, affect and conation to act are significant components in determining their attitude[38]. Study reveals that an individual's intention and willingness to demonstrate a behavior (i.e., conation) is subject to his/her attitude toward the particular behavior (affect), which is shaped by his/her belief and perceptions about demonstrating the behavior (cognitive)[110]. Figure 2.2 shows what an individual's positive attitude towards an attitude object (composting) is comprised of. These are a strong alignment among the feelings ("affect"), actions ("behaviour"), and thoughts ("knowledge") about the attitude object (composting).

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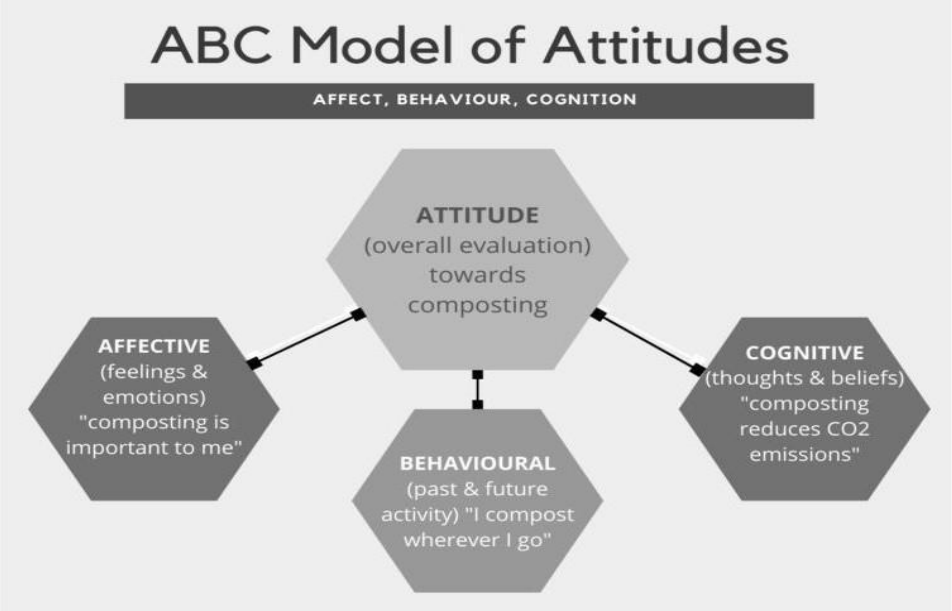


Figure 2.2*:* The ABC Model of Attitude

Source: [33]

While most attitudes are controlled by affect, conative, and cognition, there is nonetheless variability in this regard amidst people and attitudes. Some attitudes are more probably based on feelings, some on behaviours, and on beliefs. For instance, an individual attitude towards chocolate ice cream, for instance, may probably be determined largely by affect, mostly base on like for the taste while the individual's attitude toward toothbrush, on the other hand, is probably more cognitive (based on the understanding of its importance and function). Still other of attitudes may be based more on behavior. For example, attitude toward note-taking during lectures probably depends, at least in part, on whether or not a person is used to regularly taking notes. Study has shown that some attitudes are inherited, at least in part, through genetic transmission from parents while other attitudes are learned mostly through direct and indirect experiences with the objects of attitude (attitude objects)[33].

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Attitudes as originally assumed by psychologists could be formed through a fixed sequence of these three components which are thought, feelings, and action. However, studies have shown that attitudes can be formed in different sequences based on different circumstances[39]. The upsurge of Artificial Intelligence (AI) application in day-to-day life activities brings several opportunities and future promises bear, improved medical care and safer driving inclusive. For instance, AI assistants for help can be requested by voice command. This has enabled people to start a navigation system while already driving, making it unnecessary to manually set it up before or while driving[40]. AI is also increasingly used in the medical sector; example is the use of robots to assist elderly patients or surgeons. Although AI has such benefits, it also, naturally alongside the advantages, has several disadvantageous consequences and potential threats; such as, increase in unemploymen[40].

In other words, the expansion of artificial intelligence presents both exciting opportunities and potential challenges[41]. While AI has the potential to revolutionize several industries, it also presents risks such as job displacement due to automation[42]. It is thus not surprising that some people have a very open-minded opinion and accept the emergence of AI products and acknowledge their advantages for humans while in contrast to this, others seem to be ambivalent or even sceptical and fearful regarding the rise of AI products[41]. This is regarded as attitude towards the use of AI which has been defined as the expression of a positive or negative assessment of the display of a given behaviour[43]. Studies has found attitude a good predictor of a person's intention on a given action[44,45]. It evaluates personal feelings of library personnel and appraises his/her behavior; meaning it measures how positively or negatively library personnel views a specific technology[45].

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Indeed, a person's behaviour towards certain technological inventions is most likely influenced by his/her initiated attitude[44]. The attitude of individuals influences them to take actions that influences the acceptance or rejection of AI. Attitude equally measures whether library personnel perceive a given technological invention, such as AI, as good or bad. While the perception of such technological invention as good leads to its acceptance or adoption, its perception as bad will undoubtedly leads to its rejection. It can thus be inferred that attitude has effect on intention to accept or reject technologies of various kind, including AI[45].The expression of attitude, positive or otherwise, towards AI can be challenging for library personnel. This is because not all that pertains to AI and its applications are understood by library personnel.

Most often than not, library personnel who has free decision-making power over their own action tend to exhibit positive attitudes because this gives a sense of control over thoughts and behaviors in relation to a particular object or event[46]. In the same vein, skill, especially in digital literacy, has potentially been associated with positive attitudes towards new technologies. This is because it elevates individual's self-confidence, sense of understanding and belief in their own skills[46]. Library personnel may also have more positive attitudes towards AI if they feel a sense of belonging and connection with others who, for instance, use the same technology[46,47,48]. To expound the different altitudes of motivation of individuals towards attitude objects, researchers have developed the concept of Hierarchy of Effects, which divides attitude formation into three levels. These are the standard learning level (cognition-affect-conation = attitudes based on cognitive information processing), the low-intervention level (cognition-affect-conation = attitudes based on behavioural learning processes) and the experience level (affect-conation-cognition = attitudes based on experiential learning).

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2.1.3 **Digital Literacy Skill**

Digital literacy skill, in recent years, has become a major concept in deliberations on the kind of understanding and skills library personnel need in the ever-dynamic knowledge society. It has been construed in various ways in policy documents, academic literature, teaching and learning, and certification practices as Digital skill, Digital Literacy, eLiteracy, e-Skills, eSkill, Computer literacy and Media literacy[49]. These terms highlight the need to be versatile in technology usage in the digital age[50]. Digital literacy has been introduced as a set of needed skills to access the internet, locate, manage and edit digital information; participate in digital conversations, and otherwise engage with an online information and communication network[51]. It refers to the ability to properly evaluate and utilise digital resources, tools and services, and also apply it to lifelong learning processes[52]. Digital literacy competency obviously involves more than knowing how to operate devices and applications. It is intricately associated with expertise to interconnect with ICT and information skills.

Presently, what it means to be literate library personnel has advanced from possessing the skill to access, evaluate and understand static printed texts to being able to access, locate, evaluate, understand and utilize a dynamically rich variety of digital texts available via the Internet[53]. The evolution of technology has had a momentous impact on the way libraries function, the education of librarians, the skills and competency expectations of library stakeholders and the curriculum in library schools[54]. Consequently, library personnel are thus confronted with the challenge of upgrading their digital literacy skill. All over the world, Libraries have been faced with sprouting technological advancement and information digitization; which have in turn steered library automation, digital and virtual libraries, Library 2.0 and Web 2.0[55].

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The present information environment in which university libraries now operate is becoming increasingly intricate. It, therefore, calls for library personnel to acquire digital literacy skill to be able to function appropriately. Especially as library practices mediated by digital technology involve interaction with resources in many different modes of representation which require digital literacy skill. The increasingly complex information environment in which libraries operate today has called for the acquisition of digital literacy skills by information professionals. Evolving technological advancements, globalization, and digitization of information have led to library automation, digital and virtual libraries, virtual conference, pod-cast, Web-cast, community and online learning, Web 2.0, Web 3.0, Library 2.0 and 3.0; thereby increasing the need for digital literacy skill by library personnel[7].

To be skilled in digital literacy refers to possessing the set of competence, knowledge and attitudes to manipulate and communicate information and knowledge effectively; in a variety of formats and media[56]. It refers to the ability to use digital technology, information communication and technologies to locate, evaluate, use and create information in multiple formats from a wide range of sources when it is presented via computers. Digital literacy skill of library personnel denotes the ability of library personnel to perform tasks effectively in a digital environment. It includes the ability to read and construe media, reproduce images and data through digital manipulations, as well as appraise and apply knowledge gained from digital environments. Digital literacy skill for library personnel goes beyond the skill to access, evaluate and understand static printed texts.

It extends to being able to access, locate, evaluate, understand and utilize a dynamically rich variety of digital texts available via the Internet. Library personnel are thus confronted with the challenge of upgrading their digital literacy skill especially as the present information environment in which

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university libraries now operate is becoming increasingly intricate. The digital literacy skill that library personnel should possess are in levels; identified as foundational, basic, intermediate, advanced, technical and proficiency levels[57]. Digital literacy skill at its foundational level refers to a variety of foundation skills, such as the ability to learn to communicate, analyse and solve problems. The emphasis on this level is the ability to learn. The competencies at the basic level mainly relate to knowledge about computers and other related technologies.

The competencies at this level include the understanding of computer components and what they do; knowledge of how to start and switch off a computer; restarting the computer; knowledge of input devices, processing and storage. It also includes understanding the desktop, such as reducing, resizing and closing windows; understanding of various types of text-based or graphical user interface operating systems; knowledge of applications, such as Microsoft: Word, Power Point, Excel, Access and Outlook and their various uses and knowledge of other uses of computers such as e-mail, internet surfing and the likes[58].

At the intermediate level, expected digital literacy skill relate to understanding the usage of various features within applications, comprehending basic directory and folder structure, ability to copy and paste files, create backup copies, generate directories and subdirectories, delete files from directories, and make use of printers; environment create documents. It also include the ability to comprehend the variance between ‘save’ and ‘save as’ within the Microsoft Word application; open and close documents; open several documents simultaneously; modify and save existing documents; copy and move files between active documents; change display modes; apply existing styles to a document; modify document margins; change fonts and use italics; create tables, pictures and images; add borders, indents and page numbering; use spell check; change line

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spacing, preview and print document.

The intermediate level skill further includes the ability to open inbox and received mails; create message and send it; identify read and unread messages; attach files to a message; use reply to sender option; forward message; delete message; and sort messages by name and by date[58]. Digital literacy competencies associated with the advanced level, especially for library personnel, transcend the foundational, basic and intermediate level competencies to include the ability to organise information using various software applications; ability to use various information sourcing tools such Online Public Access Catalogs (OPAC), online reference sources, online journals, search engines and their contents as well as the ability to search for information on the internet and navigate through the Web and databases[59]. Summarily, the advanced digital literacy skill level identifies with technical skills required to fully use and maximise Information Communications and Technology (ICT) for effective information service delivery in university libraries.

Library personnel at the proficient digital literacy skill level are those who, in addition to have having a wider understanding of specific digital technology applications, are also able to fathom the numerous issues involved in the design, implementation and use of such technologies[60].They are knowledgeable about various online resources, search engines, and databases; are able to formulate search plans to source information from online resources; understand and can use Boolean operators in online information searching; organize, apply and disseminate information using various digital technologies; understand ethical, socioeconomic and legal issues surrounding information and information technology. These set of library personnel are also able to understand the use of standard citation formats and digital technology to evaluate and retrieved information;

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present information clearly and persuasively using a variety of technology tools and media[60]. To be digitally literate in the 21st century involves having the knowledge, skills and attitudes needed for operating technologies, understanding the media, using the internet, managing information, learning, working, living, and flourishing in today's technological society. The elements of these knowledge, skills and attitude are both interrelated and interdependent[61].

Digital literacy skill is underpinned by basic skills in Information and Communication Technology and the use of computers and other smart gadgets like smartphones, iPads or laptops to assess, retrieve, store, produce, present, communicate information and participate in collaborative networks via the internet[62]. Digital literacy skill encompasses an inclusive range of skills, all of which are essential to thrive in an ever progressively digitalised world. At present, these skills play important roles in the effective delivery of information services in university libraries. Library personnel are, therefore, increasingly required to carry out library operations with digital tools as aids.

Digital literacy skill in this current digital era as a set of abilities that require library personnel to recognise information need and to locate, evaluate, retrieve, effectively use and disseminate information when engaging with multimodal forms of texts and technologies[63]. The complex demands of digital literacy skill components (skills, knowledge and attitude) require an extensive and effective gamut of practices. The development of technology has had a substantial impact on the manner by which libraries function, the education of library personnel, skills and competency expectations of library stakeholders, and on the curriculum in library schools[64]. Library personnel thus require certain digital literacy skill; which will equip them to effectively work and manage today's digital information environment.

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Digital literacy skill of library personnel can also in a way inspire Motivation-for-acceptance of artificial intelligence. This is because rapid development of advanced information technologies in recent decades has affected every sphere of life, libraries inclusive, in ways we are just now beginning to witness. These innovative Information Communication Technologies have not only changed every day experiences, but have also impacted global-scale progressions and trends for every sector around the world. The library has of age been regarded as an agent open to change and has taken up differs challenges, such as this, to ensure the continuity of services expected of it by its users.

To the outside world, libraries are foremost in the pursuit and adaptation of innovations, from audio books to audio visual collections and from databases to makerspaces. Libraries have changed dramatically since computer access began being available. The pace of change has also accelerated with time. In fact, libraries are not only adopting but, in some cases, have facilitated new technologies and methods that have greatly enhanced their ability to perform their core mission: acquiring, processing, storing and providing access to information. Libraries have never been static but flexibly flowing with every industrial revolution. It was noted that libraries did not fair verywell during the First Industrial Revolution because of its haphazard growth which resulted in inadequate funds for acquisition and weak libraries administrations[65]. Consequently, library service was almost non-existent as cataloging lacked proper methods and the positions of library personnel were considered a part-time job. On the other hand, during the Second Industrial Revolution, traced back to early 1850-1914, libraries witness an increase in establishment, computer usage, book stocks and services to users.

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The Third Industrial Revolution, witnessed in the early wake of the 20th Century, came with an up roar in new technologies such as the internet and the renewable energies. Computers became faster and better able to store huge data. Libraries data storage problem was solved, automation became easier, Machine-Readable Catalog got more advanced, catalog records were brought into networking with new standardization and library system progressed from localized offline batching era of automation into an era of online via OCLC in computer networking. Inter-Library-Loan and online database searching also began in this era. Libraries became more decentralized due to automation factors and resource sharing was adopted due to the continued lack of funding and space for information material.

The Fourth Industrial Revolution is well-thought-out to be the outcome of the convergence of a number of recent technologies. This is because it mostly depends on internet to gather information in the ever-growing amount of circulating data; especially as the world is fuelled by data and internet connected devices that are capable of collecting and processing of huge amount of data[66]. The Fourth Industrial Revolution (4IR) era brought with it hyper automation and as a result expands the range of jobs automation which include not only the highly repetitive low-skill jobs, but also the highly routine medium-skill and some very high-skill jobs[65]. This is easily achieved given the convergence of a number of recent technologies that characterized the era; which include, but not limited to, cloud computing, big data, linked data, 3D printing, biotechnology Internet of Things (IoT), integration of technology with the human body, Robots and Artificial Intelligence.

Indeed, the advancement of technology in the Fourth Industrial Revolution (4IR) era is characterised by reformed service-delivery globally of which the Library Ecosystem is not an exception[67]. The Motivation-for-acceptance of artificial intelligence tools, just like any

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information technology, requires a certain level of digital literacy skill on the part of library personnel as its users. Modern libraries, thus, now have multiple options because of the advent of digital technologies such as artificial intelligence tools[68]. For example, AI tools and other related technologies facilitate unrestricted access to information and services regardless of time or location[69].They also enable diverse users to interact with library services and resources through the use of a variety of electronic equipment, devices, systems, and materials that generate, store, or distribute information. To make this happen, library personnel need digital literacy skill to function to their optimal level in automated libraries[56].

In this wake of the dawn of the fifth industrial revolution, university libraries are supposed vibrant place of revolution, innovation, learning, and experimentation. These libraries are a place of amassed serials, tutoring and learning services, open access, a wide range of technology services, and digital repositories, advising, and rendering of other information delivery services intended to meet the needs of library clienteles. Library personnel thus need illustrious digital literacy skill that will motivate them to accept AI and also facilitate good attitudinal disposition towards AI usage; that can be evident in reference services personnel, cataloging and meta-data specialists, other professional and para professional personnel and administrators of the university library environment as reflected in table 2.1 and 2.2[70]. As such, training and learning throughout a library personnel professional career from the novice to the expert stage of digital literacy skill for a seamless deployment of emerging technologies, as AI, should be encouraged.

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Table 2.1 Dreyfus Model of Stages of Skill acquisition, and Scaffold Knowledge, for library personnel

Skill Level	Assessment	Decision-Making	Skills: Reference Librarians	Skills: Cataloguers & Metadata Specialists	Skills: Library Administrators
Novice			Familiarity Ability Recognize	Perform Awareness Familiarity	Recognize Appreciate Understand
Advanced Beginner	Analytically	Rational	Participate Provide Assist	Draft Use Experience	Participate Supervise Assist Monitor
Competent			Coordinate Demonstrate Oversee Knowledge	Complete Knowledge	Plan Manage Develop
Proficient		Intuitive/ Rational	Supervise Direct	Review Train Supervise	Design Supervise Prepare
Expert	Holistically	Intuitive (rational)	Work Conduct	Master	Collaborate Develop Represent

Source: [70]

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Table 2.2 Expanded Dreyfus Skill Acquisition Theory (SAT) Stages of Skill Acquisition and Scaffold Knowledge, for library personnel

Skill Stages	Performance Characteristics	How Context is Assessed	Decision Making	Skills: Reference Librarians	Skills: Catalogers & Metadata Specialists	Skills: Library Administrators
Novice	Rigid adherence to context-free rules or plans (information processing) Little situational perception No discretionary judgment			Familiar with print, online, and electronic reference resources Able to conduct a reference interview Recognize importance of digital resources, open access, and repositories	Perform copy cataloging of monographic materials using OCLC and ILS Awareness of MARC 21, RDA, AACR2, DACS,LCC, DDC, LCSH, and authority records Familiar with integrated library systems	Recognize different management styles Appreciate role of department manager and administrators Understand budget and evaluation models for resources and services
Advanced Beginner	Begins recognizing situational aspects (aspects are global characteristics of situations recognizable only after some prior experience) All attributes and aspects are treated separately and given equal importance	Analytically	Rational	Participate in selection, acquisition, and maintenance of electronic resources Provide reference assistance, collection development, and research instruction in areas of specialisation Assist with institutional repository and digital initiatives	Draft complex copy cataloging of monographic materials using OCLC and ILS Use MARC 21, RDA, AACR2, DACS, LCC, DDC, LCSH, and authority records Experience with integrated library systems	Participate on technology and public service initiatives Supervise professionals and paraprofessionals Assist library department Manager Monitor portion of department budget
Competent	Begins recognizing salience, meaning of aspects Deliberate choice of plans Emotional involvement as well as detached (disembodied) rule following (equated with problem solving)			Coordinate selection, acquisition, and maintenance of electronic resources Demonstrate skills in instruction and development of effective teaching materials Oversee licensing, compliance, statistical reports, access, and other technology issues Knowledge of wide variety of information technology applications and proficiency in the use of general and subject-specific print and electronic reference resources	Complete original cataloging of print, online, and electronic materials using OCLC and ILS Skill with MARC 21, RDA, AACR2, DACS, LCC, DDC, LCSH, and authority records Knowledge of integrated library systems	Plan technology and public service initiatives, strategic planning for department Manage library department Develop department budget Manage department expenditures

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Skill Stages	Performance Characteristics	How Context is Assessed	Decision Making	Skills: Reference Librarians	Skills: Catalogers & Metadata Specialists	Skills: Library Administrators
Proficient	Sees situations holistically rather than in terms of aspects Intuitive behavior replaces reasoned responses, yet still incorporates detached decision making Sees what is most important in a situation Perceives deviations from the normal pattern Uses maxims for guidance, meanings of which vary according to the situation	Holistically	Intuitive/ Rational	Supervise the evaluation and selection of materials and services Direct and support academic research and reference for students, faculty, staff, and the local community	Review copy and original cataloging for print, online, and electronic materials using OCLC and ILS Train and supervise staff in use of MARC 21, RDA, AACR2, DACS, LCC, DDC, LCSH, and authority records *Supervise staff operating integrated library systems	Design technology and public service initiatives, strategic planning Supervise library divisions, including circulation division, technical services division, acquisitions, interlibrary loan, and serials Prepare and manage budget
Expert	No longer relies on rules, guidelines or Maxims *Intuitive grasp of situations based on deep tacit understanding *Analytic approaches used only in novel situations or when problems occur Vision of what is Possible		Intuitive (Rational	Work with stakeholders to provide strategic planning, customer support, system design, and technical evaluation activities Conduct experience in feasibility studies and alternative analyses, project management, and standard information management, and delivery practices	Mastery of technical rules and standards for library cataloging, including MARC 21, RDA, AACR2, DACS, LCC, DDC, LCSH, and authority records, metadata, and structure and coding of both local and national cataloging systems	Collaborate with administration, faculty, and students to ensure the highest levels of professional instruction services and academic excellence Develop budget and approve expenditures for assigned divisions Represent library on campus and in local community

Sources: [70]

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In the 21st century, humans are surrounded by Artificial Intelligence (AI) from all sides. Artificial Intelligence (AI) is engaged in almost all fields and advancing at a tremendous rate. Artificial Intelligence has shown a remarkable impact on people's lives by making the life of people easier and more comfortable with the help of advancements in technology. The field of information service and delivery by librarians is one area where artificial intelligence is poised to make significant improvements. Library personnel therefore should develop a positive attitude toward professional skill learning, as attitudes toward AI can be an important factor in the success or failure of AI acceptance and usage in university libraries. The use of AI is growing at a very fast pace and has permeated several facets of library personnel; both in acquiring and delivery information services. The digital literacy skills of library personnel are thus likely to play a big role in their general attitudes towards acceptance of AI[71].

Library personnel's attitudes towards the use of AI vary significantly. Some have probed the security of programs and applications using AI[72]. Fears about AI are also common to library personnel, including trepidations that AI will replace human workforce and the notion that AI could take over information services delivery and human civilizations as a whole[73,74]. At the same time, some library personnel are fascinate about the possibilities of AI and this elicit curiosity and willingness to explore the use of AI in libraries for better information service delivery on their part. A better understanding of different attitudes towards the use of AI by library personnel can thus lead to efficient implementation and usage of these technologies in libraries for fascinating library services[69,13,75].

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Thus far, research has shown that attitudes towards the use of AI is at variance with traditional technology acceptance[69]. It is a common notion that technological advancement offers individuals the ability to choose which solutions to embrace. However, attitude towards the use of AI by library personnel, its eventual adoption and incorporation library daily operations and services can largely be influenced by the digital literacy skill possessed by library personnel. Artificial Intelligence (AI) may present diverse benefits and risks than previous technologies thus making some psychological factors to possibly correlate more specifically with AI attitudes than with attitudes towards the use of other technology[75,76]. Due to the generalisation and incessant development of AI, it is principally imperative to understand factors that influence people's attitudes towards its use; especially as studies have shown that people's general attitude towards AI is linked to their rejection or acceptance and use of AI in their daily lives[72].

2.1.4 Facilitating Conditions

The term ''facilitating conditions'' originates from Triandis who describes facilitating conditions as the factors in an environment that hinder or make an activity easier to perform for an individual[77]. However, in the Unified Theory of Acceptance and Use of Technology (UTAUT) model, facilitating conditions as a construct is described to have originated from several theories[78]. These theories include the Theory of Planned Behavior by Ajzen, the Innovation Diffusion Theory by Moore and Benbasat, and the Decomposed Theory of Planned Behavior by Taylor and Todd[79]; [80];[81]. From the decomposed theory of planned behavior and the theory of planned behavior, the construct Perceived Behavioral Control (PBC) is theorised to closely relate to facilitating conditions[82]. Perceived Behavioral Control (PBC) reflects the perceptions of both internal and

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external constrictions on behavior and entails resource facilitating conditions, self-efficacy and technology facilitating conditions[80,81,83].

The Innovation Diffusion Theory, relates the construct of "compatibility" as facilitating conditions. The construct, "compatibility" is defined as the degree to which an innovation is perceived as being consistent with the values and requirements of a potential adopter[82]. From the Personal Computer Utilization Model facilitating condition construct is formally introduced and based on the Triandis definition as objective factors in the environment that make an activity easier[84]. Finally, the UTAUT model presents all these three constructs (PBC, facilitating conditions, and compatibility) as one and are integrated them into the one construct – "facilitating conditions".

Facilitating conditions may be defined as the degree to which organisational and technical infrastructures required to use an intended system are available[85]. They are factors in university libraries that make use of emerging technologies such as artificial intelligence, for instance, possible for library personnel. Facilitating conditions in university libraries can thus be expressed as the degree to which library personnel are provided organisational and technical infrastructures to support the use of an existing and/or new technologies that can facilitate better service delivery to library users. Facilitating conditions are largely determined by indicators such as organisational infrastructure and technical infrastructure. Facilitating conditions can thus be implied as the type and extent of support made available in university libraries to library personnel to influence their use of a particular technology.

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Scholars also explained facilitating conditions has been as the objective factors in the environment that make an act easy to accomplish[85,86]. Facilitating conditions as a construct is essentially built on perceived availability of resources and facilities needed to engage in a target behaviour of being favourably dispose to the acceptance and use of emerging technologies. They are essentially predictors of attitude towards acceptance and usage of emerging technologies. Facilitating conditions could act as an adoption enabler if existing resources and facilities are adequate and can sprout positive attitude towards the acceptance of artificial intelligence in university libraries[87]. The effective use of emerging technologies by library personnel hinges on the availability of organisational infrastructure (human and material resources) as well as appropriate technical infrastructure required for their optimal performance[85]. This implies that the degree to which library personnel believe that organisational and technical infrastructure exist in university libraries to support the effective use emerging technologies could determine if they will actually use the technology for information service delivery or not.

Essentially, facilitating condition is built upon the idea of the perceived availability of resources needed to engage in technology usage. These conditions could be organisational and infrastructural means or individual skills required for the implementation and use of new technologies. Facilitating condition can both serve as a propeller or an impediment to technology acceptance and usage in university libraries[88]. University libraries personnel are propelled to accept and use new technologies if their university libraries management provide them with facilities that support the technology acceptance and usage. Facilitating condition becomes a source of impediment when access to the necessary organisational support and organizational resources such as technical infrastructure is limited or scarce. Usually, university libraries personnel do not have control over

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the quality of facilitating conditions required for the implementation and use of new technologies in university libraries. This is essentially because library personnel depend on the Facilitating conditions provided by their university libraries management to engage in technology usage. Its availability thus becomes a propeller and non-availability an impediment to technology usage in university libraries. In the context of university libraries' usage of AI technologies, facilitating conditions include both the organisational structure and technical infrastructures required to use the intended technology.

This is further broken into organisational support and organisational resources which is divided into human resources (trainers in the use of artificial intelligence) and non-human resources (organisational infrastructure; computers, robots and the likes). The facilitating organisational support conditions are believed to include the availability and provision of in-house-trainings, promotion as at when due, management support in and for training and retraining outside the system, favourable policies, regulations, legal environment, provision of necessary ambience for emotional and psychological well-being. In addition to a supportive organisational structured environment, there is need for facilitating technical infrastructures conditions i.e organisational resources. These, in the context of university libraries, include but not limited to human resources and items such as computers, intranet, internet, software applications, scanners, printers, barcode readers, library management software, conducive office tables and chairs, enabling ambience, constant electric power supply and robots.

In a study of group-level effects of facilitating conditions on individual acceptance of information systems researcher split the facilitating conditions variable into two levels—the individual-level and the group-level[89]. The construct is thus, essentially built upon the idea of the perceived

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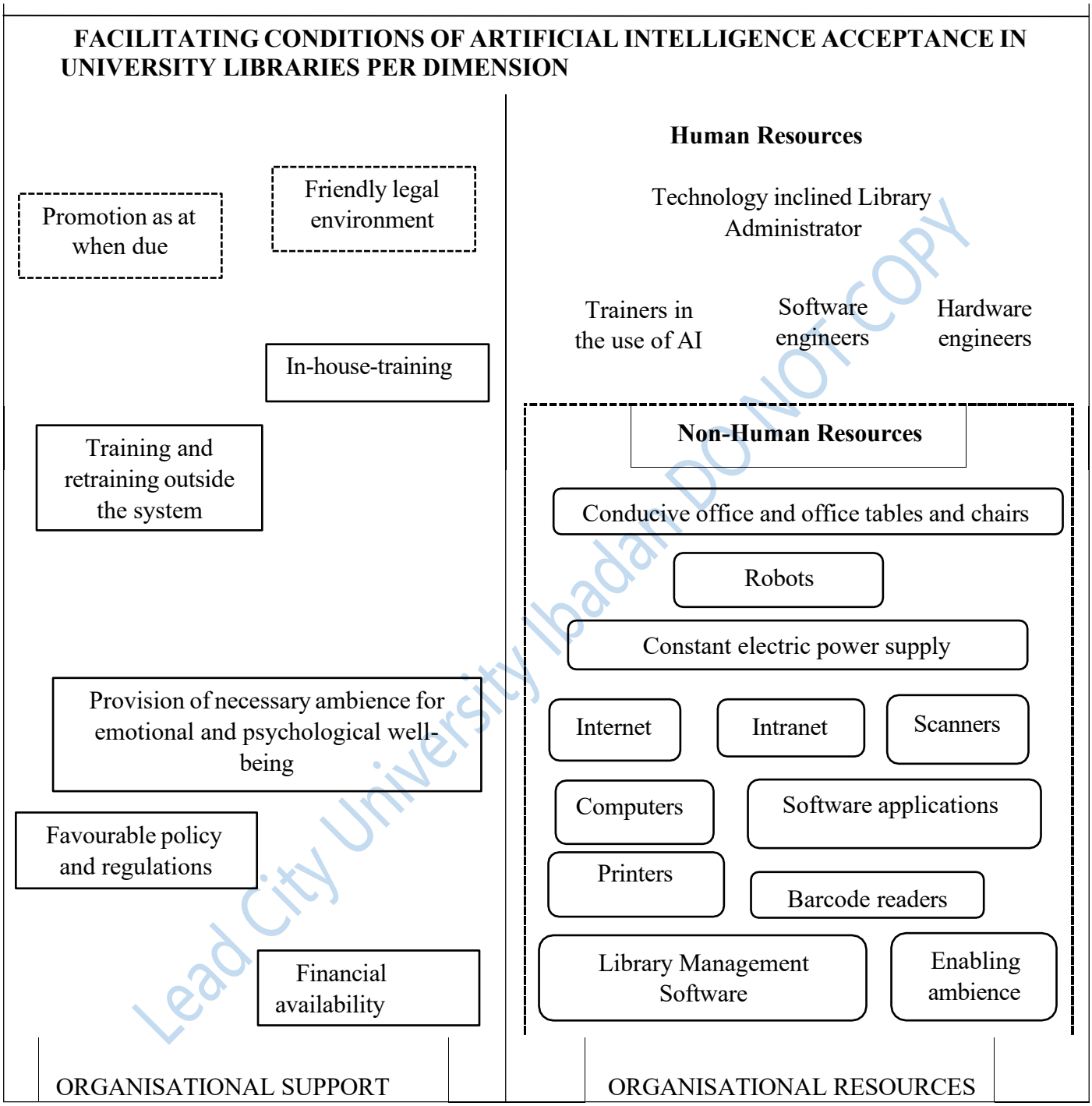
accessibility of resources needed to engage in a particular behavior, where resources are the organisational means or individual skill required for the enactment of the behavior[90]. It has been argued that if organisational factors that support or hinder the use of a particular system or technology change, facilitating conditions is likely to reflect this environmental change[91]. In the same vein, if the individual's need or ability regarding the system or technology use changes, it is also likely that the construct reflects this personal change. They thus conclude that facilitating conditions is jointly shaped by organisational factors as well as individual factors.

Facilitating conditions connotes work environmental supports designed to remove barriers to technology use by library personnel in university libraries and have been shown to have an effect on the acceptance of technology usage[88]. Facilitating conditions has been measured by different items to understand precisely how it influences technologies acceptance in general. This study seek to specifically find out how it affects the attitude of library personnel toward artificial intelligence usage in university libraries vis-à-vis its acceptance. Facilitating conditions profoundly advance university library organisational and developmental concepts through the introduction of a new paradigm with strong implication on the attitude and acceptance of new technology.

The paradigm make infrastructure facilitating condition the technological solutions deployed and maintained university library management to guarantee the sustainability and quality of services rendered by university library personnel to the university library users[92]. Facilitating conditions covers definitions from perceived behavioural control (planned behavioural theory and decomposed planned behaviour theory) and adaptability from diffusion of innovation theory[93]. In summary, facilitating conditions involve circumstances that an individual believes exist to support

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his/her activities, such as attitude towards and use of artificial intelligence[94].



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Figure 2.3: Adapted facilitating conditions of artificial intelligence acceptance in university libraries

Source: [93]

Artificial intelligence is a technology that is gradually taking over intellectual capabilities that are hitherto associated exclusively with humans. For example, the recent development of Natural Language Processing (NLP) and Machine Language (ML) methods and applications shows that algorithms can overawed human intelligence in some regards, such as speed and precision of data processing[95]. "Artificial intelligence makes machines or computers intelligent just like library personnel, in order to make them assist in library operations and also deliver library services to library users in library personnel's' fashion[96]. There are four foundations in artificial intelligence. These are representations, search, reasoning and learning[47]. These foundations are the basic requirements available in all artificial intelligence systems. Representations refers to the related knowledge of the intelligent system. It includes the knowledge-base of the system to identify problems and also the architecture on which it can be manipulated. Representation of an expert system for university libraries would be the description of locations where a particular information resource can be located in the library[47].

Search is one essential aspect of artificial intelligence systems used for problem-solving methodology. It could be a database search of previous problems and solutions for the closest match to the current query. The Frequently Asked Questions (FAQ) on library website is an example of this. The third foundation of artificial intelligence, reasoning, is premeditated to proffer solutions to problems via knowledge. This is the very essence of the artificial intelligence application to any field; education, business and others. Reasoning could be deductive and inductive reasoning in which knowledge is used to deduce a set of possible solutions to a particular problem. The use of expert systems that proffer solutions to problems based on some stored knowledge- based is an example of reasoning in as a foundation of artificial intelligence application.

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The learning feature of artificial intelligent systems makes them acclimate and gather intelligence by learning the history of the system. This learning aspect covers the aspect that reconfigures the representation and adjust search to be heuristic. It updates the knowledge aspect and augments the reasoning aspect. One of the most common methods use by the learning feature of artificial intelligence systems is the statistical learning. That is the use of history and frequency of different search to predict future queries or develop inductive hypotheses. This typically assume that events follow some known distribution of occurrence. The learning aspect also covers neural networks. These networks are trained on present knowledge, applied to existing problems; after which the value of the outcome is interpreted as solution[47].

Another aspect the learning feature of artificial intelligent systems covers is reinforcement learning this is the aspect that reward or penalise based on the ability to solve problem more or less accurately. All of these fall within Machine Learning (ML) and Deep Learning (DL). The relevance of Artificial Intelligence to university libraries cannot be over emphasized. This is because it can be used to process, organise, store and retrieve large collections of information[97]. Artificial intelligence are modern technologies used to manage libraries in the 21st century[19]. The crucial aptitude of artificial intelligence is the development of computer systems or/and machines that think, behave and, in fact, rival human intelligence, and this clearly has major implications on librarianship[47].

Intelligent library automation systems depend on artificial intelligence technologies to offer knowledge-based services to library clientele[47]. Artificial intelligence application in libraries should, therefore, not be misunderstood as library automation. Library automation denotes the

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degree of mechanization to routine library operations while Artificial intelligence application combines automation with intelligent rational systems that assist library personnel in the delivery of information services in university libraries. Although artificial intelligent systems can imitate and thus supplant human beings in libraries, researchers believe that that this invention will never replace librarians[98,99]. Corroborating this assertion, other research further establish that the application of artificial intelligence in libraries will bring library personnel and users closer, against the notion that artificial intelligence will alienate library personnel from their users[100,101].

True to this, library personnel have been deploying artificial intelligence to answer users query and deliver quality library services. Expert Systems (ES), Natural Language Processing (NLP), Pattern Recognition and Robotics are some of the aspects of artificial intelligence employed in library management system to this end[102]. Concisely, natural language processing, a feature of artificial intelligence mostly used in libraries, is the analysis and generation of natural language text by computers to enable natural languages such as French, English, or Chinese, serve as the medium through which users and computer systems interact[103]. In university libraries, natural language processing is used to design intelligent expert reference system or information retrieval system, where users can interact directly with the system using natural languages. The natural language goes in as input to the computer system. The computer system then processes and analyses it and then respond accordingly with the needed information. In university libraries, NLP has been used as medium of interaction in database management systems.

Another practical application of artificial intelligence in libraries is its application to subject indexing[54]. Subject indexing is a crucial library service that requires the technical expertise and

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intellectual judgement of library personnel to read, analyse and suggest apposite terms to be used as keyword in the search of a given document. Any computer system that can undertake this task can be said to be artificially intelligent. Artificial intelligence can be designated to handle subject indexing or reference services. This is because they are equipped with incorporate methods and techniques with specialised problem-solving expertise. Expertise entails knowledge about a specific field of knowledge or subject, eclectic coverage or grasp of the field problems and techniques for solving some of these problems.

Firstly, to design artificial intelligent system(s) for reference services or subject indexing, pertinent knowledge from sound subject indexer is mined and fed into computer systems. The systems through Machine Learning by means of the knowledge-base which serves as a set of rules culled from various human experts and history of the system becomes a tool for indexing documents or/and responding to reference queries from library users, imitating human thinking/reasoning of library personnel. Aside from the provision of reference assistance and helping library management in policy decision making, Expert Systems can be applied to lots more in university libraries. Artificial intelligence imitates human thinking/reasoning of library personnel and can assist in the application of cataloguing regulations and rules, ascertain vendor jobs in acquiring library resources[104].

The benefits of artificial intelligence systems application in university libraries extend also to the collection development section of the Library. Artificial intelligent systems could be developed to handle collection or information resources development of the library. Artificial intelligence systems can suggest new information resources based on past purchases or user interests - a keen

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strategic method to advance acquisition of information resources and heighten user experience[105]. Another facet of librarianship that has touched by artificial intelligence is the information retrieval segment. Library information retrieval deals with the recall of information or resources from a file or database[55]. It is concerned with the structure, analysis, organisation, storage, searching, and retrieval of information stored on the Internet, in an information centre or a library's collections[106].

As the quantity of information held in libraries grow, several computerised and artificial intelligent retrieval systems were invented to cope with the collection of this vast amount of information and also facilitate information searching and retrieval from the library's collection by users[56]. Contemporary information retrieval tools now used in university libraries to provide fast and innovative access to information by library personnel include but not limited to: electronic databases, web search engines, Online Public Access Catalogue (OPAC) and robotic systems customised to welcome and direct library users and also for print information sources retrieval and delivery. Robotics technology is nowadays been use in university libraries across the globe to ease space restraints and make information resources readily accessible to users[107]. The University of Technology, Sydney (UTS) vast automated storage and retrieval systems is an example of this.

The automated system, designed as robotic cranes beneath the library, manage thousands of closely packed vats of books. These robotic cranes store and retrieve information materials for users on request from the online catalogue of the library collections. The robotic crane, at the instance of any request, automatically search for requested item(s), retrieves it from the vats and deliver it to library personnel for delivery to appropriate library shelf where the user can pick it up. The benefits of the system are: minimisation of storage space, maximisation of retrieval speed, minimisation of cost and averting the need to build expensive on/off-site storage facility. University libraries are another fertile ground for the application of artificial intelligent systems[54].

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Corroborating this, it can be inferred that artificial intelligence will help university libraries do more rather than take over the jobs of library personnel; as many may fear[56]. Artificial intelligence can thus be said [108]to notably enhance quality information services delivery in university libraries, improve library operations and services, upgrade and heighten the relevance of libraries and library personnel in an ever-changing digital society.

There are some facilitating conditions that must be put in place to facilitate and encourage library personnel to have Motivation-for-acceptance of artificial intelligence in university libraries. Facilitating conditions is considered as one of the key factors in the acceptance of any particular technology or information system as confirmed by studies that examine the role of facilitating condition as a factor in the acceptance of new technologies and big data technology[109]. Thus, identifying facilitating conditions as a main factor of technology adoption taxonomy. Since AI tools are complex technologies, it is presumed that their acceptance is influenced by the availability of both organisational and technical infrastructural facilitating conditions[109]. Facilitating conditions might be available in the external environment (technical support) and within the organisation as well, such as in information technology infrastructure support[60].

The usage of AI in libraries promises to be of great benefits to library personnel and librarianship. This is because all aspects of AI can be applied to the day-to-day activities in the library. For instance, the expert system aspect of AI can be applied to reference service, a foremost activity of any library. The expert system can be made to serve as a substitute for reference librarians. Online Reference Assistance (ORA), REFSEARCH, PLEXUS POINTER, AMSWERMAN are advisory systems for locating reference resources and factual data without the reference librarian in person. The expert system aspect of AI can also be applied to cataloguing: one of the oldest library techniques. There are two ways artificial intelligence techniques can be applied to cataloguing: (a)

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Human-machine interfaces, where intellectual work is divided between the intermediate and the support system. (b) An expert system with full cataloguing capabilities associated with electronic publishing systems[110]. Since cataloguing texts are generated online, it can be passed through a knowledge-based system, to carry out the cataloguing process without any intellectual effort by librarians.

Classification is a basic prominent knowledge organisation activity of librarians. The application of expert systems in the field of library classification includes EP-X, Coal SORT and BIOSIS. Indexing of periodicals is another green area where the expert systems of AI are applicable. The motive for automating the intellectual aspects of indexing is to improve its quality and maintain its consistency. Indexing involves identification of concepts, translating the concepts into verbal descriptions, selecting and assigning controlled vocabulary terms that are conceptually corresponds to its verbal descriptions. Information provided by the indexer can be processed by the expert systems to arrive at appropriate controlled vocabulary to assign to relevant subdivisions. The system can make inferences and from the inference, it can take appropriate action. The 'Med Index' is the best example of the library indexing system.

The Natural Language Processing and Machine learning are other aspects of AI that holds promising benefits to librarians. NLP can be applied to many disciplines, including libraries. Its application to the field of library and information science is reflected in search databases such as the Online Public Access Catalogue (OPAC). It improves the precision of retrieving relevant documents and also reduces proportions of recalls and related files retrieved. Machine learning in Library Services is beneficial to the improvement of library metadata generation. Machine learning provides an array of probable tools to help library personnel generate metadata for print and digital resources. It facilitates increased speed of cataloguing for metadata generation and also massively

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improve the depth of subject terms.

The robot is defined as a reprogrammable, multipurpose manipulator, automatically controlled, programmable in three or more axes, which can be fixed on the location or portable for use in automation applications[111]. The Comprehensive Approach to Printed Material (CAPM) can build a personalized robot for scanning system which allows the browsing of imprints in real time through the web interface. The CAPM system allows a robotic system to open an item and rotate its pages automatically for printing. Although the application of Intelligent Interface of AI, especially to online databases does not resolve the challenge of restructuring a database, it allows the search system itself to make the approach more intelligent. This it does by facilitating the selection of appropriate hosts and databases; allowing users to state information needs in their own vocabulary; determining the level and access to requested information; adapting information retrieval extent; formulating the query terminology used in the selected databases; expressing the search query in the required format; and presenting the search results in a helpful way, such as by year or probability of relevance.

The growth in AI technologies with its attendant influx of technologies and exponential progression of information available on the web have implications for the role of librarians. Consequently, to remain relevant in this information explosion, technology blast and ever-increasing computer savvy users' era, library personnel in universities in South-West, Nigeria must accept AI (base on their perception of its usefulness and ease of use) as well as have positive attitude (belief, feelings and readiness) towards its use. However, it is worth noting that the acceptance and attitude toward the use of AI by library personnel all over the globe is not a stand-alone but permeated by different factors. Notably, for this study, their digital literacy skill and

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facilitating conditions.

A major impediment to the implementation and enhancement of the use of information technology in libraries is not technical but psychological[112]. The author posited that librarians' attitudes are a significant factor in determining the structure of libraries and information services in any type of library. It was submitted that there are several organizational variables that can influence librarians' attitudes toward information technology. These includes the size and organisational structure of libraries, budget; IT-related decision-making processes, the type of library, a supportive environment, and adequate opportunity to acquire relevant skills. This submission point to the fact that facilitating conditions such as institutional support, availability of ICT infrastructure and clear-cut policies regarding the adoption and use of ICT among others are determinants of the attitude of library personnel towards the use of artificial intelligence which are essentially modern ICT tools. These connections have been explored by various researchers from across the world.

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2.2 Theoretical Framework

Theoretical framework can be regarded as the blueprint for a research inquiry. It mainly serves as the guide to build and support a research study as well as provides the structure that defines the epistemological, philosophical, methodological, and analytical approach to the study unabridged[113]. Theoretical framework provides particular perspective through which to examine a topic, with the use of propounded theories or models. These theories are formulated to expound, predict, and comprehend phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critical bounding assumptions. Theoretical framework introduces and defines the theory that support and illuminates the research study.

Theoretical review serves as the structure and backing for the rationale, problem statement, purpose and significance of the study. Its importance thus cannot be over emphasis, especially as it is the foundation from which all knowledge is metaphorically and literally constructed for a research study. There is plethora of theories postulated for describing the Motivation-for-acceptance and Attitude-towards-use of new innovations as Artificial Intelligence; that relates to library personnel in South-west Universities, Nigeria. There are also theories that underpins factors such digital literacy skill and facilitating condition which may directly or indirectly influence the acceptance and attitude towards the use of AI for effective information service delivery by library personnel in South-west universities in Nigeria. Four theories will be used to underpin this study. These are Technology Acceptance Model (TAM), Theory of Mind/ Trilogy of Mind, Skill Acquisition Theory (SAT) and Unified Theory of Acceptance and Use of Technology (UTAUT)

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2.2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) postulates that the acceptance of technology is predicted by the users' behavioural intention, which is, in turn, determined by the perception of technology usefulness in performing the task and perceived ease of its use[114]. Developed by Fred Davis in 1989, this theory has severally been used to explain computer usage behaviour. The primary objective of TAM is to shed light on the elements underpinning the acceptance of technology usage, in order to forecast the behaviour of probable users and offer a theoretical explanation for the efficacious implementation of AI technology by library personnel in South-west universities, Nigeria. There are four main constructs in the model, namely: perceived usefulness, perceived ease of use, intention to use and usage behaviour. Technology Acceptance Model (TAM) also inform practitioners about measures that should be taken prior to the implementation of technologies. According to the model, the intention to use and actual usage behaviour are directly influenced by Perceived Usefulness and Perceived Ease of Use. The Technology Acceptance Model (TAM) highlights that, library personnel judgments of how valuable and easy to use AI are strong elements that impact its adoption. Projecting this as fundamental predictors of a user's acceptance of technology usage[115].

The Technology Acceptance Model (TAM) is considered a predominant theory in the field of technology acceptance. The aims of the theory is to enhance the understanding of user acceptance through in-depth analysis of the design and implementation of an information system. Moreover, to establish a theoretical framework that helps designers and implementers evaluate new systems prior to implementation. The TAM has two main constructs which pertinent to this study. These are Perceived Usefulness (PU) and Perceived Ease of Use (PEU). PU is the degree to which library personnel believes that using a particular system would enhance his or her job performance while

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PEU refers to the degree to which a person believes that using a system would be free of effort[116]. Worthy of note is the fact that additional external variables can be added to the model and assumed to either influence PEU or PU. In the case of this study, digital literacy skill and facilitating condition have been assumed to be able to influence PEU and PU.

The Information System community has embraced TAM to shed light on the acceptance of intelligent products and services. The First, TAM, famously referred to as TAM1, was developed from the Theory of Reasoned Action (TRA) to improve understanding of user acceptance of information systems[116]. It is the most widely used model to explain the behavior of consumers, such as library personnel, regarding technology adoption. However, despite the wide application of TAM which confirms the robustness of the model (which on the average, accounts for almost 40% of the variance in technology acceptance), the authors of the model aimed to increase its predictive power further[114]. The justification for this extension of the model was hinged on the limited knowledge of the conditions that underpins users' opinion of technology utilisation.

The extension, named TAM2, consisted of five additional exogenous variables and two moderators[114]. The introduced moderators and constructs incorporated into TAM2 are: experience and voluntariness, subjective norm, image, job relevance, output quality and result demonstrability. The justification for incorporating these moderators and constructs in the extended TAM stem from prior studies which had found that these moderators and constructs had significant direct influence on technology usage behaviour. Although TAM1 and TAM2 provided roust explanations about main determinants of technology usage intention, still, they were limited in application to research on interventions which could be used to increase the technology adoption

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rate and were criticised for providing few actionable guidelines to practitioners. Hence the birth of TAM3; garnished with computer self-efficacy, perception of external control, computer anxiety, computer playfulness, perceived enjoyment and objective usability as new direct predictors of perceived ease of use[114].

Despite the different modifications to the model, Perceived Usefulness and Perceived Ease of Use remains a constant variable that influence the Motivation-for-acceptance of AI technologies by library personnel in South-west universities, Nigeria. According to the model, Perceived Usefulness directly impacts attitude toward using a technology and behavioural intention to use the technology whereas Perceived Ease of Use directly impacts Perceived Usefulness and attitude toward AI technology use such that it generates indirect impact on behavioural intention of library personnel to use a technology. Similarly, both beliefs are hypothesized to be capable of being directly influenced by external variables such as digital literacy skill and facilitating conditions.

Eventfully, all variables of the model are assumed to influence the Attitude-toward-use which in return influence the Behavioural Intention (BI) and Actual Use (AU) of the system[116]. The simplicity and ease of utilization make the TAM a popular framework for technology adoption research. Technology Acceptance Model (TAM) has been used in Nigeria to explore system adoption in various fields. The TAM has been employed in studies of the acceptance of various types of information technology and use to explain the acceptance of wearable devices (like the smart watch), business intelligence systems, intelligent health monitoring systems, intelligent tourism, smart in-store technology, the smartphone credit card, and many others. Reviewed literature of the technology models and theories avow that these models have effect on the previous, current and also future application of technology adoption[117,118,119,120,121,122,123,124,125].

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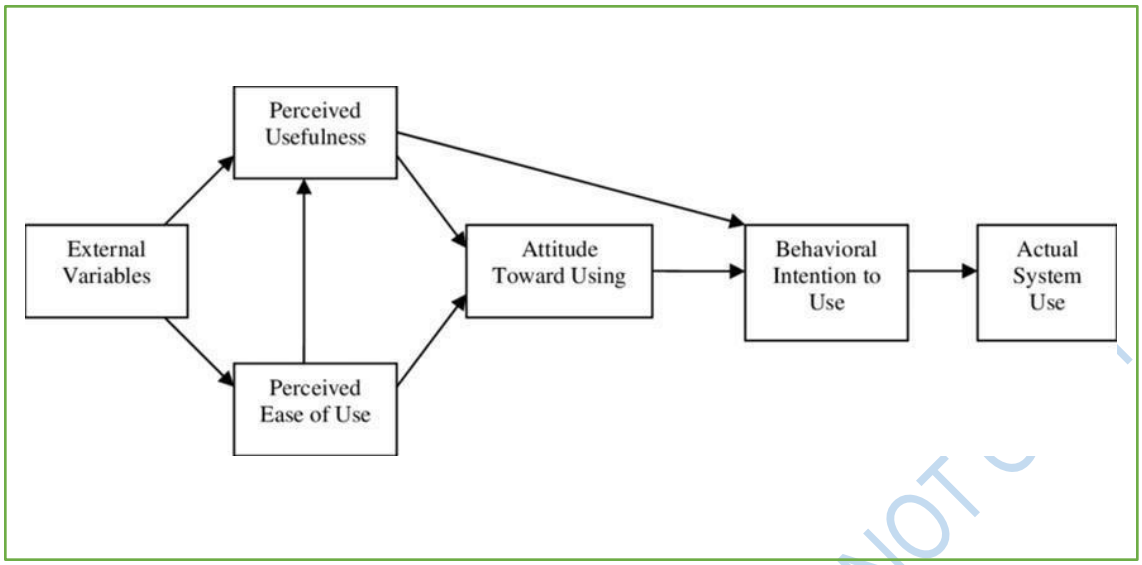


Figure 2.4 Technology Acceptance Model

Source: [114]

The TAM model was adopted in this study based on its emphasis on library personnel adoption of artificial intelligence in the library determined by their perception to the usefulness and ease of using the adopted information system. From literature, it has been understood that library personnel's perception plays a major role in influencing their Motivation-for-acceptance and Attitude-towards-use of AI. In view of this, this model helps to form the key construct to measure library personnel perception on the usefulness and ease of use as motivation for acceptance of artificial intelligence in the library. Furthermore, the theory will help predict the usability of AI and to identify further modifications which may be made in order to enhance the use of AI among library personnel in South-west universities, Nigeria.

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2.2.2 **Theory of Mind/ Trilogy of Mind (TOM)**

Theory of Mind otherwise refer to as Trilogy of Mind (TOM) has its roots in the field of psychology was first propounded by Rosenberg and Hovland in 1960[36]. It is applied as an underlying theory in this research for the dependent construct Attitude-towards-use of Artificial intelligence. Theory of Mind (ToM) is propounded as the ability to comprehend mental states such as intentions, desires, and beliefs, both within oneself and in others, recognising that these mental states can differ among individuals like library personnel in South-west universities, Nigeria. It is a cognitive skill developed as library personnel advance in age and experience. Theory of mind (ToM), according to scholars is the ability to attribute mental states to oneself and others, serving as foundational elements for social interaction with human and AI technologies[126,127].

The trilogy is a classification of mental activity that birth attitude into cognition, affection, and conation that originated in the eighteenth-century German faculty psychology, but was adopted by Scotland, England, and America's nineteenth-century association psychologists[126]. It is suggested that the classification scheme will continue to be useful in assessing contemporary psychological emphases, such as the present prominence of cognitive psychology to the relative neglect of affection and conation[128]. Summarily, ToM refers to the cognitive, affective and conative capacity to ascribe mental states to self and others which can facilitate rational reasoning. Rational decisions are based on the evaluation of choices guided by library personnel's beliefs, desires, and value of AI application in information services delivery.

Thus, the decisions library personnel make concerning the acceptance of AI usage in university libraries have varying degrees of rationality based on the degree of digital literacy skill and understanding of advantages of AI library services delivery. According to the ToM, cognition

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entails perception and understanding of objects, which, when combined, produce beliefs about the object. At its most basic, affect is the subjective experience of likeness or hatred for something, based on individual's intuition and/or feelings. In other words, affect influence the exhibition of positive or negative feelings about the object. These are primarily evaluated as favourable or unfavorable, and considered an essential aspect of attitude[109]. Conative implies inclination to act on the basis of both current discernment and emotional feedback. It is not the action itself, but rather the state of readiness just prior to action[109]. Positive attitudes lean towards to positive tendencies, whilst negative attitudes have a tendency to facilitate avoidance.

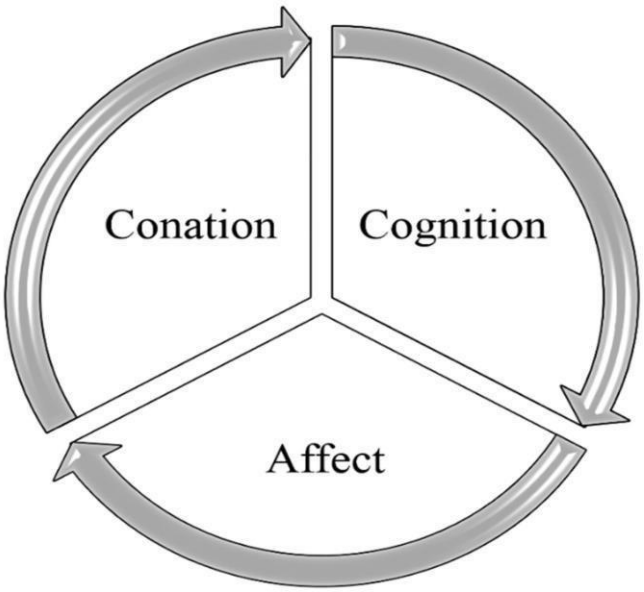


Figure 2.5 Theory of Mind
Source: [37]

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The theory is pertinent to this study because it underpins the dependent variable Attitude- towards-use of AI by library personnel in South-west universities, Nigeria. This is because it accentuates the cognition, affection, and conation of library personnel as it affects their Attitude- towards-use of AI, be it acceptance or rejection. Therefore, if library personnel display a positive attitude

towards AI, it is expected that their actual behaviour will be one that will favour the acceptance and use of AI in university libraries in South-west, Nigeria and vice visa.

2.2.3 Skill Acquisition Theory (SAT)

The Skill Acquisition Theory (SAT) was developed by Dreyfus and Dreyfus in 1980[129]. The theory states that the acquisition of a wide range of skills follows a notably similar pattern in its progression from the initial grasp of knowledge to proficient and effortless performance: These occurrences share a set of fundamental principles that are applicable to the acquisition of all skills[130]. The theory postulates that, when individuals acquire a skill through external instruction, they normally pass through five stages: Novice/Beginner, Advanced Beginner, Competent, Proficient, and Expert stages. At the novice stage, library personnel learn objective facts and features that are important to the skill and acquires rules for AI usage in library based on these facts and figures. At the Advanced Beginner stage, library personnel move beyond the exclusive use of information processing as a result of their experience with real situations.

At competent stage, library personnel develop skill when they recognize the relative benefits of AI application to effective information service delivery in university libraries. At this level of digital literacy skill library personnel can effortlessly make use of context-free features of AI and also most salient features of AI to simplify and improve their performances. Thus, the competent stage is essentially what cognitive psychologists refer to as problem solving while the proficient and expert stages in the Dreyfus model are technical know-how stages, they are stages of understanding that effortlessly occurs upon seeing similarities with previous experiences as shown in table 2.3.

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Table 2.3: Adaptation of the Dreyfus and Dreyfus Skill Acquisition Theory (SAT)

Stage	Skill
Novice	Sees what is most important in a situation
	Rigid adherence to taught rules or plans
	Little situational perception
	No discretionary judgment
Advanced Beginner	Guidelines for action based on attributes or aspects
	Situational perception still limited
	All attributes and aspects are treated separately and given equal Importance
Competent	Coping with 'crowdedness'
	Now sees actions at least partly in terms of longer-term goals
	Conscious deliberate planning
	Standardised and routinised procedures
Proficient	Sees situations holistically rather than in terms of aspects
	Perceives deviations from the normal pattern
	Decision-making less labored
	Uses maxims for guidance, whose meaning varies according to the situation
Expert	No longer relies on rules, guidelines or maxims
	Intuitive grasp of situations based on deep tacit understanding
	Analytic approaches used only in novel situations or when problems occur
	Vision of what is possible

Source: [128]

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The scientific ancestries of Skill Acquisition Theory can be found in various branches of psychology, which ranges from behaviourism to cognitivism and connectionism[130]. Skill Acquisition Theory draws on Anderson's Adaptive Control of Thought (ACT) model which itself is a kind of cognitive stimulus-response theory[131]. Skill Acquisition Theory as a neo-Piagetian theory that integrates components of both cognitive and behaviouristic theories[132]. The basic claim of SAT is that the learning of a wide variety of skills shows a remarkable similarity in development from initial representation of knowledge through initial changes in behaviour to eventual fluent, spontaneous, largely effortless, and highly skilled behaviour, and that this set of phenomena can be accounted for by a set of basic principles common to acquisition of all digital literacy skills[101].

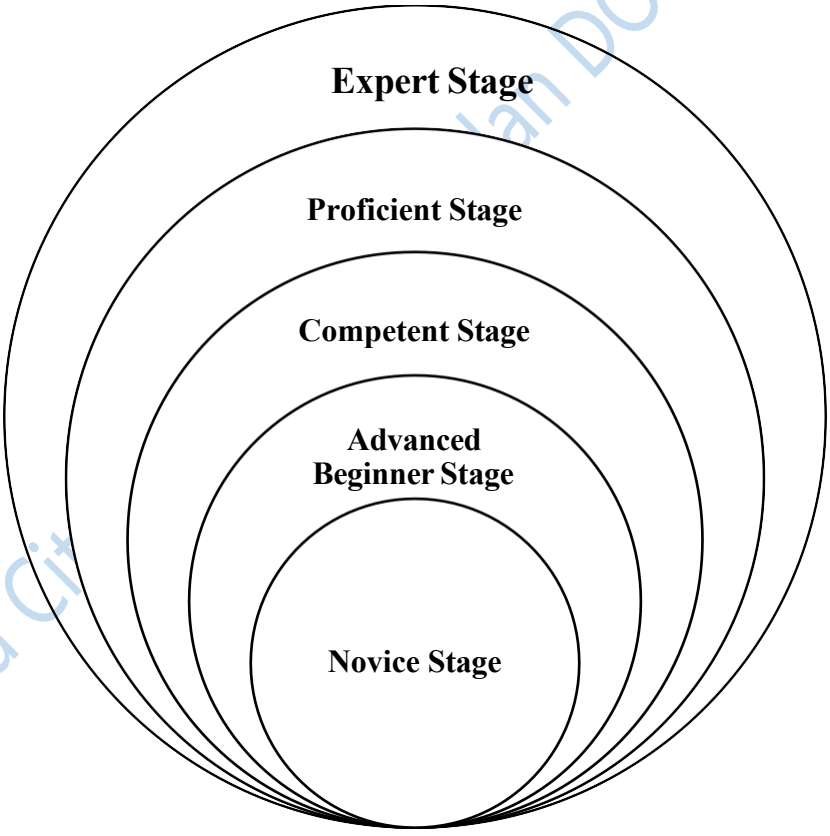


Figure 2.6. Skill Acquisition Model

Source: [128]

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Artificial Intelligence (AI) is a new area in Library and Information Science and one that requires certain skills before library personnel can adapt it into their library service delivery and operations. Such skills can be acquired through training, mentorship and coaching among others. These organisational supports or facilitating conditions can aid positive attitude towards higher adoption of AI by library personnel. Scholars noted that when individuals acquire a skill through external instruction, they normally pass through five stages. In the same vein, library personnel might be novice to AI use in the library since it's a new development. However, continuous learning in the use of AI for various library activities can move them from the spectrum of being a novice to an advanced beginner, competent, proficient, and expert users.

This theory is of germane to this study because it provides an understanding into the possible skill level of digital literacy that can influence library personnel Motivation-for-acceptance and Attitude-towards-use of artificial intelligence for university libraries operations. An important assumption of the Dreyfus model is that, with experience and mastery, skill is transformed to actual usage of AI technologies. Studies while using the theory recommend that mentorship, coaching, and professional development empower employees to learn new skill and also progress up organizational career ladders[133,134]. In the context of this study, SAT is a suitable theoretical framework that underpins digital literacy skill, which is one of the independent variables, as it affects AI technology acceptance and usage for effective library service delivery by library personnel in South-west, university libraries, Nigeria. The theory will help predict the usability of AI and to identify further modifications which may be made in order to enhance the use of AI among library personnel in South-West universities, Nigeria.

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2.2.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) was proposed by Venkatesh, Morris, Davis, and Davis in 2003. The model suggests that the actual use of technology is determined by behavioural intention. The perceived likelihood of adopting the technology is dependent on the direct effect of four key constructs, namely performance expectancy, effort expectancy, social influence, and facilitating conditions, which is an independent variable in this study. The effect of predictors is moderated by age, gender, experience and voluntariness of use[78].Scholars validate the model as appropriate to provide a unified theoretical background for research on Information Systems (IS) or adoption of Information Technologies and dissemination for teaching and learning for a sustainable future[135]. The model also applies to studies on acceptance of technology, as determined by the core parameters suggested by this model to directly determine Information Technology behavioural intentions influence of effort expectancy, social influence, performance expectancy and facilitating conditions[136].

The model stemmed from Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behaviour (TPB), Diffusion of Innovation (DoI) and Social Cognitive Theory (SCT) as Parent Theories. Studies based on UTAUT have establish that its capability to expound technology usage behaviour is much exhaustive than the capability of any single model as an extended model of other technology acceptance theories and/or model[137,138,139]. The variables employed by UTAUT to explore behavioural intentions and usage behaviours include Performance expectancy, Effort expectancy, Social Influences and Facilitating Condition. Performance expectancy relates to the user's belief that the use of technology will enhance job performance and productivity which is moderated by gender and

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age[140]. Effort expectancy refers to the degree of ease associated with the use of the system. It is moderated by gender, age, and experience.

Facilitating conditions relate to the availability of resources, support, and infrastructure necessary for technology adoption and usage. It is viewed as an underlying factor to acceptance and usage of AI technologies by library personnel. The provision of resources, support, and infrastructure necessary for technology adoption and usage by university libraries management can influence the motivation-for- acceptance and Attitude-towards-use of AI in South-west universities, Nigeria. Another construct in the UTAUT, is the social influence which reflects the impact of external elements on an individual's decision to adopt a particular technology. It comprises factors such as peer pressure, social norms, and support from colleagues or superiors. It is also moderated by gender and age; voluntariness and experience. Social influence encourages knowledge- sharing platforms and can be further influenced by the creation of communities of practice among users.

In the context of change enablers, facilitating conditions may include access to reliable internet, computer systems, stable power supply, training sessions, and technical support. The provision of facilitating conditions encompasses ensuring that necessary technical and infrastructural resources and support systems are in place for use. This can include establishing partnerships with government agencies, technology providers and/or funding organisations to secure needed funding, technical and infrastructure assistance. Additionally, provision of training sessions and professional development opportunities can influence the attitude towards and also motivate users to adapt and/or adopt emerging technologies effectively[139]

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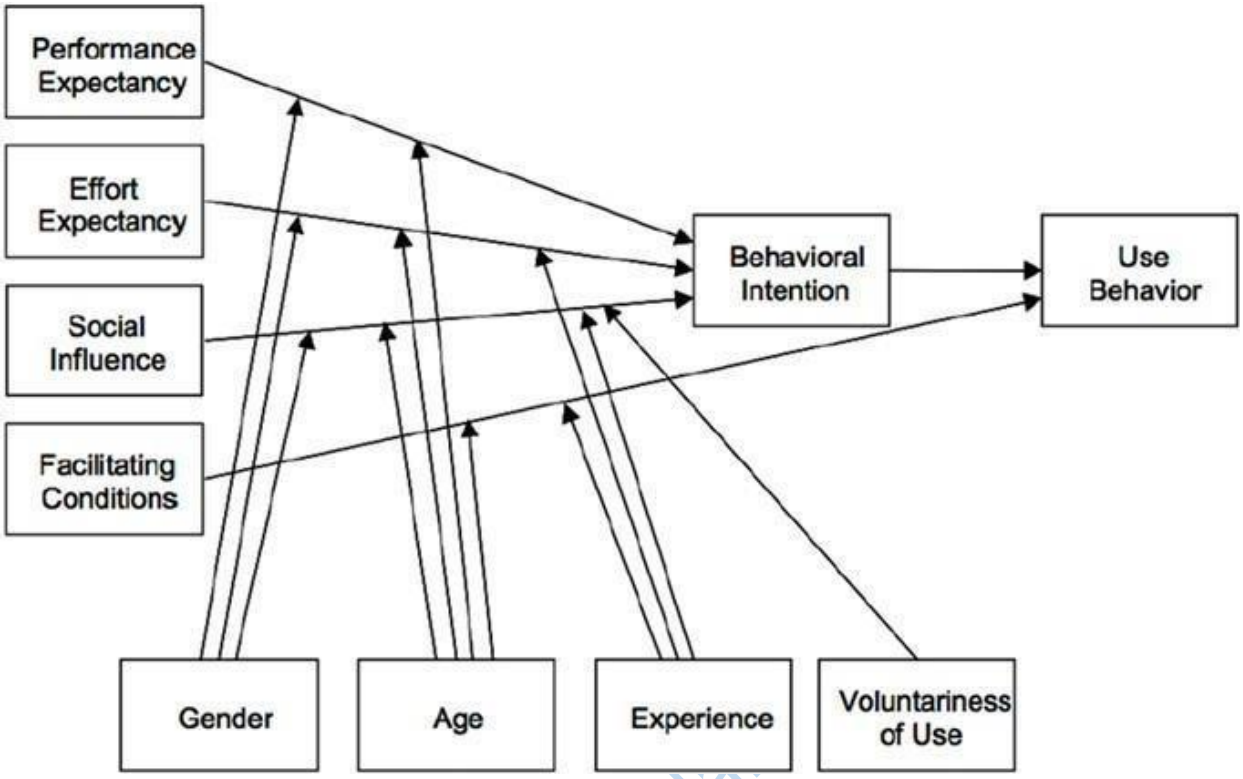


Figure 2.7*:* Interaction of the elements of the UTAUT model

Source: [77]

The Unified Theory of Acceptance and Use of Technology (UTAUT) is adopted because studies confirmed that is can be used to determine how facilitating conditions, that is organisational support and organisational resources, stimulate attitudes toward the use of technology[85,86,87]. This theory is germane to this study because UTAUT has a high degree of explanatory power for library personnel's intentions and behaviours in using AI technologies for day-to-day library operations to enhance information service deliver to patrons. It is one of the few theories, if not only, that provides an understanding into the possible relationship between facilitating conditions, an independent variable in this study as correlate of the dependent variables: Motivation-for- acceptance and Attitude-towards-use of AI by library personnel in South-west universities, Nigeria.

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2.3 Review of Empirical Studies

2.3.1 Digital Literacy Skill and Motivation-for-acceptance of Artificial Intelligence by Library Personnel

In a study that investigated effort expectancy and performance expectancy as determinants of librarians' use of cloud computing technologies in libraries in Southwest, Nigeria[141]. Four (4) research objectives and research questions guided the study. The study employed the descriptive correlational research design to study selected academic libraries in Southwest region of Nigeria. The study`s population included 259 professional librarians from selected institutions in the region. Due to the manageable size of the population, the total enumeration sampling technique was adopted. A total of 220 valid copies of the questionnaire were retrieved and used for the study, thus, resulting to a response rate of 85%. The data collected were analysed using descriptive and inferential statistics and the findings from the study revealed a significant positive relationship exist between effort expectancy and librarians` use of cloud computing technologies in academic libraries in Southwest, Nigeria.

The study also showed that a significant positive relationship ($r = 0.429$ **; $df = 220$; $P < 0.05$) exists between performance expectancy and Librarians` use of cloud computing technologies in university libraries in Southwest, Nigeria. The study, therefore, concluded that cloud computing technologies enhances service delivery in contemporary libraries, as a result, university libraries in Southwest, Nigeria must embrace the different cloud-based technologies so as to deliver cutting-edge services in this competitive era. The study recommended that the library management should as matter of importance train and retrain their staff so they can become aware and conversant with the new technologies associated with the 4th IR revolution; the federal government should as matter of urgency allocate funds for technological development in the educational sector and make

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same available to libraries so that libraries can acquire latest technologies needed for service delivery in the 4th IR era and librarians should develop flair for technological innovations which will help to activate in them the positive attitude required to effectively utilize the sophisticated technology associated with the 4th IR era. The study is related to this present research in that the study investigated the effort expectancy and performance expectancy as determinants of librarians' use of cloud computing technologies in libraries. Further, both studies were conducted in Southwest, Nigeria. This is because cloud computing and artificial intelligence are related and categorized under the fourth industrial revolution. However, this study and the present study do not have similar research design. Other differences are observed in their sample and sampling technique, and population.

In another study, aimed to develop a theoretical model for exploring the behavioural intentions of medical students to adopt AI-based Diagnosis Support System[142]. Two research objectives guided the conduct of the study. The study employed an online cross-sectional survey and used the Unified Theory of User Acceptance of Technology (UTAUT) to examine the intentions to use an AI-based Diagnosis Support System among 211 undergraduate medical students in Vietnam. The study employed the snowball sampling technique to enlist partakers. Firstly, the survey was sent out by the researchers to a core group of twenty medical students from different medical universities. They were required to invite other medical students in their networks after their completion of the survey, to also partake in the survey.

This stopped when no one was invited or partake in the survey within 7 days. The recruitment chain generated a total of 223 medical students from different provinces. The study made use of structured questionnaires slated into two parts: the demographic characteristics section which

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include gender, age, specialty, living area, and location, and 26 items that reflected the 9 latent constructs for the theoretical models. The items were about performance expectancy (PE), social influence (SI), effort expectancy (EE), personal innovativeness in IT (PI), task complexity (TC), technology characteristics (TECH), perceived substitution crisis (PC), initial trust (IT), and behavioural intention. Participants were requested to respond by means of a 5-point Likert scale ranging from "strongly disagree" (1), "disagree" (2), "somewhat agree" (3), "agree" (4) to "strongly agree" (5). Internal consistency reliability was assessed by using Cronbach's alpha. Good internal consistency was defined as a Cronbach's alpha _0.7. Good internal consistency was defined as a Cronbach's alpha _0.7. Partial least squares (PLS) structured equational model was use to evaluate the relationship between latent constructs. Effort expectancy (0.201, $p < 0.05$) and social influence (0.574, $p < 0.05$) were positively linked with initial trust, while no association was found amongst performance expectancy and initial trust ($p > 0.05$). However, social influence (0.527, $p < 0.05$) was found to be positively related to behavioural intentions. The research accentuates positive attitude in using an AI-based diagnosis support system amidst prospective Vietnamese physicians, and the influence of social influence on this choice. The advancement of AI-based competent curricula should be considered when reforming medical education in Vietnam. In relation to this present study, the study examined behavioural intentions of medical students to adopt an AI-based Diagnosis Support System. The study and this present study do not have similar research design. Other differences are observed in their scope, sample and sampling technique, and population.

Another study investigated librarians' intent to use artificial intelligence for effective library service delivery using a partial least square structural equation modeling-baseapproach[73]. Three research objectives were used for the study. The research aimed at examining factors that can

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influence the librarians' intention to use artificial intelligence in their libraries for better and more efficient service delivery to library patrons using the theoretical lenses of the Theory of Plan Behaviour (TPB). Quantitative method, using a cross-sectional approach, was used and questionnaires were used as instrument of data collection. Three federal university libraries from North-eastern Nigeria were covered and 242 professionals and para-professionals librarians composed the population of the research. G*Power application was used to estimate the minimum sample size of the research amounting to 119 samples thus, a proportionate stratified random sampling technique was used in obtaining the sampling in which 157 were distributed across the three selected academic libraries out of which 151 were successfully returned and analysed.

Findings from the study revealed that TPB's theoretical variables were positively significant factors that influenced the librarians' intention to use Artificial Intelligence in their respective libraries. The finding further indicated a high intention to use artificial intelligence by library personnel in their libraries. In relation to this present research, the study considered library personnels' intention to use artificial intelligence for effective library service delivery using a partial least square structural equation modelling-based approach. These studies differ in terms of design, scope, sample and sampling technique, and population as well as method of data analysis.

In another study which examined the role of artificial intelligence (AI) in the context of a front-line service meeting to understand how users accept AI technology-enabled service[143], five research objectives and hypotheses guided the study. This study adopted an online survey method using a convenience sampling for data collection. This study collected 454 Korean employees through online survey methods. Questionnaire was used as instrument for data collection. The

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survey company asked some of the target companies for the survey and acquired employees' email addresses through the human resources management department of target companies with their agreement. The professional survey company initially contacted 11 employees in the target companies in Korea. Each first-level contact (or "sampling seed") was asked to forward the invitation email to their colleagues at their organization and to ask those recipients also to send the email to other staff. The potential maximum number of recipients could be assumed to include all employees of the target companies, which numbered over 500 at that time. The study used hierarchical regression to test the hypothesis empirically.

In the results, first, clarity of user and AI's roles, user's motivation to adopt AI-based technology and user's ability in the context of the adoption of AI-based technology increases their willingness to accept AI technology. Second, privacy concerns related to the use of AI-based technology weakens the relationship between role clarity and user's willingness to accept AI technology. And, trust related to the use of AI-based technology strengthens the relationship between ability and user's willingness to accept AI technology. The study is related to this present research. This study investigated how users accept AI technology-enabled service in Korea. This study and the present study do not have similar research design. They also differ in terms of scope, sample and sampling technique, and population.

Another study to investigate students' acceptance of ChatGPT in higher education using an extended unified theory of acceptance and use of technology[144]. This study further explored the factors driving students' acceptance of ChatGPT in higher education. The study employs the unified theory of acceptance and use of technology (UTAUT2) theoretical model, with an extension of Personal innovativeness, to verify the behavioural intention and use behaviour of ChatGPT by students. The study uses data from a sample of 503 Polish state university students.

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The PLS-SEM method is utilized to test the model. Results indicate that Habit has the most significant impact (0.339) on behavioural intention, followed by Performance expectancy (0.260), and Hedonic motivation (0.187). Behavioural intention has the most significant effect (0.424) on Use behaviour, followed by Habit (0.255) and facilitating conditions (0.188).

The model explains 72.8% of the behavioural intention and 54.7% of the use behaviour variance. While the study is limited by the sample size and selection, it is expected to be a starting point for more research on ChatGPT-like technology in university education, given that this is a recently introduced technology. The study above is related to this present research. This study was carried out on students' acceptance of ChatGPT in higher education. The similarity here is that ChatGPT is a technology driven by artificial intelligence tools. While this study focused on the use of ChatGPT in higher education, this present study focuses on the motivation for acceptance of artificial intelligence in libraries. This study and the present study do not have similar research design. They also differ in terms of scope, sample and sampling technique, and population.

Another study investigated the influence of digital skills on technology acceptance among librarians in Jordan. Five (5) research questions were used for the study[125]. The study employed a descriptive survey design. The population of the study consisted of 230 library professionals from 10 public universities and 20 private universities in Jordan. A questionnaire was developed and used to collect the required data from university libraries in Jordan. Mean (M) and standard deviation (SD) were calculated to assess the degree of the respondents' assessment of their level of digital skills and the difficulties, they face to acquire the required DS in their library profession. Multi- way ANOVA analysis was conducted to investigate the existence of any statistical differences at significance level ($\alpha = 0.05$), using f-tests between responses based on different variables.

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Inferential statistical methods such as multiple regression analyses were also applied to test the formulated hypothesis at significance level 0.05 to determine the relative influence of the level of the possessed DSs on the technology acceptance. Regression analysis was used to determine the influence of the DSs on the acceptance of technology among librarians at significance level 0.005. Of the 230 respondents, 203 questionnaires were suitable for analysis with a response rate of 88.3%. The findings revealed a high level of digital skills among the librarians. The result also indicates financial issues as the main challenges that hinder librarians from obtaining needed digital skills. Most importantly, librarians' level of digital skills was found to positively influence librarians' acceptance and use of technology in academic libraries in Jordan. Factors such as age, sex, specialization, experience, and library type were observed to have little or no effect on the results.

This study recommends that university libraries continuously train their professional staff in order to keep up with digital environment requirements. This is an important aspect that strongly contributes to increase librarians' confidence in themselves and their work environment and it strongly recommends keeping enhancing librarians' DSs and competencies to ease their acceptance of technology. The study is related to this present research as it was carried out on the influence of digital skills on technology acceptance among librarians in Jordan. The similarity here is the factors that influence the acceptance of technology. This is because artificial intelligence is technologically driven. This study and the present study do not have similar research design. They also differ in terms of scope, sample and sampling technique, and population.

Another study investigated artificial intelligence (AI) literacy within Zambian academic libraries, with focus on librarians' perceptions and applications of AI[145]. The research measured the AI literacy level among Library and Information Science Professionals in Zambia, determined the

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level of their awareness and knowledge of AI applications in libraries. It also explores their perceptions on the advantages and challenges of AI technology usage in library services. The research employed a quantitative survey methodology approach to determine librarian's AI literacy levels, attitudes, and perceptions within a specific timeframe. Purposive and convenience sampling method was used to ensure a diverse representation of academic librarians from Zambia, covering various demographics such as gender, experience, level of study, current role, and institution of employment. The final sample included 82 participants.

The findings showed a solid understanding of AI fundamentals among Zambian librarians and positive attitudes towards AI's potential benefits in library information services delivery. Challenges such as the need for enhanced AI expertise, resistance to change, and budgetary constraints were acknowledged. This study is related to this present research as it investigates artificial intelligence (AI) literacy within Zambian academic libraries, focusing on librarians' perceptions and applications of AI. These studies are similar because they focus on artificial intelligence. Though the independent variables are different. This study and the present study do not have similar research design. They also differ in terms of scope, sample and sampling technique, and population. Another study investigated the factors influencing clinicians' willingness to use an AI-based clinical decision support system[146]. The study leverages validated questions to formulate an online survey and consequently explore cognitive human factors influencing clinicians' intention to use an AI-based Blood Utilization Calculator (BUC), an AI system embedded in the electronic health record that delivers data-driven personalized recommendations for the number of packed red blood cells to transfuse for a given patient. A descriptive survey design was used for the study. A purposeful sampling strategy was used to exclusively include BUC users who are clinicians in a university hospital in Wisconsin. The study recruited 119 BUC users who

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completed the entire survey. The study leveraged structural equation modelling to capture the direct and indirect effects of “AI Perception” and “Expectancy” on clinicians' Intention to use the technology when mediated by “Perceived Risk”.

The findings indicate a significant negative relationship concerning the direct impact of AI's perception on BUC Risk (ß = −0.23, $p < 0.001$). Similarly, Expectancy had a significant negative effect on Risk (ß = −0.49, $p < 0.001$). The study also observes a significant negative impact of Risk on the Intent to use BUC (ß = −0.34, $p < 0.001$). Regarding the indirect effect of Expectancy on the Intent to Use BUC, the findings show a significant positive impact mediated by Risk (ß = 0.17, $p = 0.004$). The study noted a significant positive and indirect effect of AI Perception on the Intent to Use BUC when mediated by risk (ß = 0.08, $p = 0.027$). Overall, this study demonstrated the influences of expectancy, perceived risk, and perception of AI on clinicians' intent to use BUC (an AI system). AI developers need to emphasize the benefits of AI technology, ensure ease of use (effort expectancy), clarify the system's potential (performance expectancy), and minimize the risk perceptions by improving the overall design. The study concludes that enhanced and safe adoption of AI can uplift the overall care process and help standardize clinical decisions and procedures. An improved AI adoption in healthcare will help clinicians share their everyday clinical workload and make critical decisions. This study is related to this present research. It investigated factors influencing clinicians’ willingness to use an AI-based clinical decision support system. The both studies are similar because they focus on artificial intelligence. Though the independent variables of this study differ. This study and the present study do not have similar research design. They also differ in terms of scope, sample and sampling technique, method of data analysis and population.

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2.3.2 Facilitating Conditions and motivation-for-acceptance of Artificial Intelligence by Library Personnel

A study investigated awareness and perception of the artificial intelligence in the management of university libraries in Nigeria[147]. Four (4) objectives guided the conduct of the study. Due to the growing presence of artificial intelligence (AI) in developed countries, this study investigated the awareness and perception about artificial intelligence in the management of university libraries in Nigeria. This study is survey research. Both qualitative and quantitative paradigms were used for the study to allow for triangulation of research results. The questionnaire used for the study. One hundred academic librarians were randomly selected from ten universities in Nigeria. The sample of the study was drawn from academic librarians working in the selected university libraries for quantitative research and the interview.

The study used a structured interview with the heads of ICT/automation units in each of the ten purposively selected university libraries in Nigeria. The questions were formally structured in such a way that the questions were not altered from one participant to the other. The study employed the interview method. The interviews were conducted in English language, as all the respondents were fluent in the language. The questionnaire was given to the ten academic librarians purposively selected from each university library.

The finding of the study revealed that academic librarians are aware of the existence of AI usage in the university libraries and that the fear of job loss is the major constraint they face in the adoption of the technologies; even though they are aware that the innovative technologies will enable efficient user satisfaction. The study recommends the need for academic librarians to make themselves relevant in this era of the fourth industrial revolution, by acquiring necessary skills that are in line with the technologies. It is also critical that library management educate academic

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librarians to understand that the adoption of AI in the library does not translate to the loss of jobs. The study above is related to this present research. This study and the present study do not share similar research design. Other differences are observed in geographical scope, sample and sampling technique, and population.

In another study to investigate the exploration of artificial intelligence (AI) in Nigeria academic libraries[148]. The study was anchored on four specific objectives which are; to ascertain the aiding the exploration of AI, find out the level of information and communication technology skill of library staff, determine the perceived ease of use of AI and factors militating against the adoption of AI. The descriptive survey method was adopted for the study. The population of the study is 250 librarians who are members of the Librarians' Registration Council of Nigeria (LRCN). The sample size comprises 170 librarians who use computer systems in the day to day running of academic libraries in Nigeria with fair knowledge of AI tools and they were used as the respondents of the study. A structured 4-point online questionnaire was designed for data collection Data collected were analysed using the frequency count, percentages and mean (x) score.

The results were presented in tables with the decision rule of 2.50 and above as accepted while below 2.50 as rejected. The study revealed that institutional support for adoption of AI is low (average mean 2.21), but the level of ICT skill of library staff is high (average mean 3.08). In the same vein, analysis also revealed that there is perceived usefulness of AI to the librarians (average mean 3.05). The study also discovers that the factors militating against the adoption of AI is high (average mean score 2.82). The study also revealed that academic libraries experience certain challenges in adopting AI, such as lack of needed AI tools and inadequate planning. The study recommended that the heads of libraries should persuade the institution management to equip the

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library with adequate, up-to-date, and state-of-the-arts ICT facilities to encourage use of AI tools in libraries in Nigeria, they should develop policies on AI adoption tools in libraries and parent institutions should provide adequate AI tools for librarians to work with. These would position librarians to function effectively in the 21st century library services delivery. The study above is related to this present research. This study and the present study do not share similar research design. Other differences are observed in geographical scope, sample and sampling technique, and population.

Another study investigated the knowledge and perception of artificial intelligence among library and information science professionals in Zambia[149]. Three (3) objectives guided the conduct of the study. The descriptive approach was employed for this study. The three independent variables, namely knowledge, perception, and skills, were examined, while the dependent variable was the number of AI implementations. Zambia was the focus of this study because this kind of inquiry has not yet been conducted in the country. The study used a 5-point Likert scale, with (1) as strongly disagree being the lowest score and (5) as strongly agree the highest.

Thematic analysis was employed to analyze the data, resulting in the identification of three themes: awareness of AI, perception of AI, and AI skills. The researchers utilized SPSS for data analysis and to address the research questions. The results show that library and information science professionals had a favourable and encouraging outlook with regard to artificial intelligence but were also concerned about artificial intelligence replacing librarians' roles and the barriers to adopting artificial intelligence technologies in Zambian libraries. The article suggests that libraries should consider the study's findings before implementing artificial intelligence, particularly concerning technology and facilities, librarians' proficiency in artificial intelligence, and

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leadership positions in artificial intelligence initiatives. This study is related to this present research. It focused on knowledge and perception of artificial intelligence among library and information science professionals in Zambia. The study and the present study do not share similar research design. Other differences are observed in geographical scope, sample and sampling technique, and population.

In a different study the perspectives of librarians on the awareness and readiness of academic libraries to integrate artificial intelligence (AI) for library operations and services in Nigeria[150] was examined. Four specific research objectives guided the study. The study adopted a qualitative method. The qualitative method focuses on obtaining data through an open-ended survey. A narrative qualitative method was chosen because it is assumed to help reveal the perception of librarians in academic libraries regarding the subject matter of the study which focuses on the perspectives on the awareness and readiness of academic libraries to integrate AI in operations and services. The population for the study comprised academic librarians from all the Federal Universities in the six geo-political zones of Nigeria. The study targeted system librarians, system analysts, and librarians experienced in the use of ICT. From each library, six librarians were selected. This gave a total of 36 librarians that represent the sample for the study. The use of an open-ended survey in this study enabled the researchers to gather relevant data via interview. Collected data was analysed using content analysis.

The findings reveal that Nigerian academic librarians are aware of the integration of AI systems into library services delivery and how it is being adopted and used in many academic libraries across the globe, although this is not so in the Nigerian context. The findings also reveal that librarians have mixed feelings about the readiness of academic libraries to integrate AI systems into library operations and services. Based on the librarians' perception, the result implies that

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integration of AI in library operation and services will take the library to the next level by reducing human errors due to repetitiveness in library tasks, and if care is not taken, AI system might take their job role. The challenges reported was academic libraries in Nigeria may likely face the problem of funding, inadequate experts, limited power supply, limited budget to procure the technology and training personnel that will be in charge of the system maintenance. The study recommends the need for adequate funding for libraries to be able to utilize AI and other information and communication technology infrastructure as well as recruit librarians with relevant requisite technological skills. The study is related to this present research as it focused on knowledge and perception of artificial intelligence among library and information science professionals although the study and this present study do not share similar research design.

A study examined assessment of awareness, perceptions, and adoption of artificial intelligence in university libraries in Osun State, Nigeria. Three (3) research objectives guided the study[151]. The study adopted a descriptive survey. The population for this study consisted of 10 university libraries in Osun State, Nigeria. Total enumerative sampling was used for the study. Structured interview questions were used to elicit responses from the respondents. Frequency count and percentages were used to analyse the data collected. Findings revealed that 80% of the respondents are aware of artificial intelligence, similarly, 80% of the respondents claimed to have a positive perception regarding AI, they affirmed that AI is here to make library routine easier and not take their job from them, and finally 100% of the responded claimed that AI is yet to be adopted in the surveyed libraries.

Based on the results, the awareness level of librarians was high, as well as their perception, however, AI is yet to be adopted among the libraries surveyed, considering the advantages associated with AI to libraries. The study, therefore, recommends that stakeholders in library

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administration and institutional management need to invest in artificial intelligence and also encourage the training of librarians in this regard for efficient information service delivery. The study above is related to this present research. This study is also similar to the present study as they share same geographical scope. Both studies covered the southwest region of Nigeria. This study and the present study do not share similar research design. Other differences are observed in their sample and sampling technique, and population.

Another study investigated the awareness and perceptions of AI among librarians in university libraries in Kwara State, Nigeria[152]. The study adopted descriptive survey method. The population of this study are 37 professional librarians in University of Ilorin's and Kwara State University's libraries. This comprises 23 librarians from University of Ilorin library and 14 from Kwara State University library. Census enumeration sampling technique was used to select the respondents. The study adopted the use of questionnaire was used to collect data from the respondents. Data collected was analysed and presented in frequency, simple percentages and mean (x). Findings revealed that Chatbots and Dynamed are the AI the respondents were aware of. The respondents have the perceptions that AI technologies can be adopted in university libraries, capable of replacing human librarians in future and AI is a positive development for librarians. Findings further indicated that the respondents perceived that AI is beneficial in university libraries because it provides patron-tailored recommendations to items, can reduce manual and repetitive tasks performed by librarians and facilitates the discovery of new knowledge. But the major factors affecting the adoption of AI include poor internet connectivity and lack of expertise among librarians.

This study concluded that librarians' awareness of AI influences their perceptions of it. It recommends among others that management of university libraries in Kwara State should train

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their librarians on AI. The study recommended that management of university libraries in Kwara State takes proactive measures to train their librarians in the field of Artificial Intelligence (AI), adequate financial backing will empower university libraries to invest in the necessary infrastructure for the successful integration of AI and the management of university libraries in Kwara State should prioritize ensuring a stable power supply. This study is related to this present research. The study focused on awareness and perceptions of AI among librarians in university libraries in Kwara State, Nigeria. This study is also similar to the present study as they share same geographical scope. This is to say further state that both studies covered the southwest region of Nigeria. This study and the present study do not share similar research design. Other differences are observed in their sample and sampling technique, and population.

Another study sought to understand library users' opinions, attitudes, and needs regarding using artificial intelligence (AI) in libraries[153]. Four (4) research objectives guided the study. This study employed a survey research design to collect information on users' perceptions and experiences with AI in Pakistani libraries. A survey questionnaire was administered to 71 respondents from academic and public libraries throughout the region. Data was collected via an online survey platform and included questions pertaining to participants' attitudes toward AI use in libraries, the perceived benefits and challenges of AI, ethical and privacy considerations, user demographics, and factors affecting adoption rates of AI-powered services - all open for four weeks. Descriptive statistics such as frequency and percentage distributions were used to analyse survey data. Inferential statistics such as chi-square tests of independence were then applied to uncover relationships between variables like user demographics and attitudes towards AI use in libraries. The study revealed a generally positive attitude toward AI use in libraries.

Concerns were raised regarding such decisions' privacy and ethical ramifications. Libraries must

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consider user needs and expectations when implementing and managing AI- powered systems. At the same time, further research is necessary to explore different topics related to this emerging technology field. The findings underscore the need for libraries to be open and proactive when addressing data privacy and protection when implementing AI-powered services. It also stresses the significance of providing education and outreach to promote their use and address any misconceptions users may have. The study, among others, recommended that libraries should continue to explore using AI-powered systems to enhance services and meet user needs while giving priority to user privacy and data protection. The study is related to this present research. The study focused on information on users' perceptions and experiences with AI in Pakistani libraries. This study and the present study do not share similar research design. The Other differences are observed in their scope, sample and sampling technique, and population, especially, the respondents also differ.

A study on the professional skill and attitudes of library personnel towards digital services in selected university libraries in Nigeria[154]. Four (4) specific research objectives guided the conduct of the study. Despite the evolution of digital technologies in university libraries, as well as massive investment and research on digital libraries particularly in developed countries, the study observed that many university libraries in Nigeria are still relatively reliant on traditional library services which no longer serve and satisfy the twenty-first-century users' needs. Descriptive research design was adopted for the study. The population of the study comprised all the 196 library personnel from the 5 purposively selected university libraries in Nigeria. The total enumeration sampling method was adopted; while the questionnaire was the main instrument for data collection.

Simple percentages and frequency were used for the analysis of data collected from the field. The findings of the study revealed that internet service was the most available digital service in

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libraries. It further revealed that most of the library personnel have requisite digital skills in basic computer operations. However, erratic power supply was a major problem affecting digital services in the university libraries. The study recommended a need for library personnel to acquire advanced information and communication technology skills and also develop a positive attitude that will enable them to render effective digital library services in the university libraries. Aside this, university libraries should also strive to educate library users on how to access digital services in the libraries. The study is related to this present research as it investigated the attitudes of library personnel towards digital services in Nigeria. This study and the present study do not share similar research design. The Other differences are observed in their scope, sample and sampling technique, and population.

Another study examined librarians' awareness, positive attitude and ICT skills as panacea for effective services delivery in the Fourth Industrial Revolution (4th IR) era in academic libraries in Southern Nigeria[155]. Four (4) research objectives guided the study. A descriptive survey research design was adopted for this study. The total population for this study was eight hundred and forty-one (841) librarians from 84 university libraries in Southern Nigeria. The entire population was sample using total enumeration sampling technique because of the manageable size of population. Questionnaire was used to collect data from the respondents. The data collected for this study was analyzed using simple percentage/frequency counts and weighed mean. Eight hundred and forty-one (841) copies of questionnaire were distributed to the respondent and a total of Six hundred and seventy- nine (679) was duly completed and found usable, therefore there was 76.2% response rate. Findings from this study revealed that the extent of librarians' awareness of the technological innovations associated with the 4th IR era is low. Also, it was shown that if librarians exhibit positive motivation towards embracing the 4th IR era technological advancement, they will be able

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to: Adapt to changing technologies associated with the 4th IR; Accept the shift from conventional service delivery to World Wide Web (WWW) based service delivery among others.

Also, being in possessions of computer systems by librarians will to a very high extent facilitate effective library services delivery in the 4th IR era. The following were suggested to improve on librarians' motivation to technological innovations of the 4th IR era. Librarians should develop flair for technological innovations which will help to activate in them the positive attitude required to effectively utilize the sophisticated technology associated with the 4th IR era and libraries/librarians should also abreast itself with the latest technologies to provide optimal services in minimum time through training, seminars, conferences to acquire and update the necessary ICT skills that is required to remain relevant in the 4th IR era and the accompanying changes it has brought to the educational sector and the library in particular. This study is related to this present research. This study and the present study do not have similar research design. Other differences are observed in their scope, sample and sampling technique, and population.

2.3.3 Digital Literacy Skill of Library Personnel in Universities and Attitude-towards-use of Artificial Intelligence

A study investigated the level of digital competencies for provision of smart information services at academic libraries in Jordan[156]. Three research objectives and research questions each guided the conduct of the study. One research hypothesis was formulated to guide the study. In so doing, the study investigated the level of smart information service implementation at academic libraries in Jordan; the correlation between the level of smart information services offered by the libraries and the level of digital competencies among the library staff. The population of the study comprised of 340 library staff of 10 public universities and 20 private universities in Jordan and a

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census sampling was therefore used to select participants for the study. This research is designed using survey design to collect comprehensive information from the study participants. A questionnaire was disseminated to 340 respondents, and 246 questionnaires were returned and were suitable for analysis with a response rate of 72.4%. Mean and standard deviations as well as Pearson Product Moment Correlation was used for data analysis.

The results indicated a moderate level of smart information service offered by academic libraries, as well as a moderate level of digital skills associated with the advocacy of smart information services. The results also indicated a strong and positive relationship between the level of smart information services at the investigated libraries and the level of digital competencies among the librarians. Going further, the findings will assist academic libraries comprehend how to respond to the emergent change in users' information-seeking behaviour by understanding available human resources digital skills and the requirement to upscale the skills. The study is related to this present research because it covers the aspects of digital competencies for the provision of smart libraries. Nonetheless, the both studies employed a correlational research design while they are differences in terms of geographical scope, sample and sampling technique, and population.

In a similar study on digital literacy skills and job performance of library personnel in state universities in River state, Nigeria[157]. The primary objective of this study is to ascertain the level of expertise held by university library staff members working in Rivers State University libraries with regard to digital technology. The study employed a correlational research design. This investigation was founded on a series of research questions as well as three hypotheses that were proposed to explain the data. Because the population of the study consisted of 32 librarians working at Rivers State University and Ignatius Ajuru University of Education, the study compiled their findings through the use of a correlational survey design and a census sampling technique.

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The reliability of the questionnaire was demonstrated using Cronbach's alpha, which indicated a value of 0.75 for the ability to assess digital literacy and a value of 0.82 for the ability to assess work performance. For the purpose of testing the hypotheses at the 0.05 level of significance, the product-moment correlation coefficient developed by Pearson was utilized.

The study observed that library personnel who had higher levels of digital literacy also performed better in their employment. If every librarian in the profession has access to it, then not only will their productivity at work increase, but they will also see an increase in the number of consumers they serve. The study's findings prompted the researchers to suggest that management provide incentives and support to library personnel so that the latter can acquire these skills; that library staff in Rivers State universities should continue to leverage digital communication tools for effective job performance and routinely use email and share information using ICT; and that library personnel in Rivers State universities should improve on the use of digital creativity. To achieve this goal, we must improve our capacity to disseminate knowledge through the use of technology and data in a continuous cycle. The study is related to this present research because it covers digital literacy skills and job performance of library personnel. In both studies, the same research design (correlational design) was used. However, there are variations in terms of scope, population, sample and sampling technique.

Another study examined the digital literacy skills and job performance of librarians in state-owned Universities in Rivers State[158]. Five research questions and five hypotheses guided this study. A correlational survey design was adopted for the population of the study which comprised 26 librarians from Rivers State University (RSU) and Ignatius Ajuru University of Education (IAUE) and a total enumeration sampling technique was used because the population was manageable. The test of hypotheses of the study established that there is a significant relationship between digital

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literacy skills and the job performance of library personnel in the study. Hence, if acquired by library personnel it can positively influence their job performance and increase user patronage of the library. Based on the findings, the study recommended that every librarian should learn fundamental digital skills to improve their job effectiveness in libraries and that management should encourage library personnel to learn these skills by providing support and incentives. The study is related to this present research as it covers digital literacy skills of library personnel. The studies employed a correlational research design and differ in terms of geographical scope, sample and sampling technique, and population.

Another study investigated digital literacy training needs for enhancing job performance of library staff in Federal Universities in Nigeria[159]. The study's objectives were to identify benefits of digital literacy to the jobs performed by the library personnel, the training needs of library personnel, and the factors that hinder digital literacy training for library personnel in Nigeria. The study adopted a descriptive survey. The study used questionnaire to collect data from 143 library staff consisting of 86 professional library personnel and 57 para-professional library personnel from nine9 federal universities in the South-South and South-East Nigeria. Questionnaire was developed by the researchers to collect data. Convenience sampling technique was used to select the respondents from the population for the study. In all, 220 copies of the questionnaire were administered directly by the researchers and trained research assistants in all the nine (9) federal university libraries selected. The data generated from the questionnaire were analysed using Mean and Standard deviation to answer all research questions. For the purpose of this study, a mean of 2.50 and above represents the agree level, while a mean below 2.50 represent the disagree level.

The results revealed that digital literacy would enhance efficiency in the provision of information materials, competency in the application of new technologies into library operations and

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competency in information dissemination and retrieval. The study identified so many areas that needed ICT training. The study also found that many factors hindered ICT training of library staff in the universities in Nigeria. The study recommended that there is need for compulsory and adequate training and retraining of library staff in the area of ICT knowledge and skills acquisition; the supervising authorities of universities in developing countries should provide more funds for the acquisition of ICT facilities and there is need for improved funding for ICT training for library staff in university libraries. The study is related to this present research as it covers digital literacy training needs for enhancing job performance of library staff. Both studies employed a correlational research design while they differ in terms of geographical scope, sample and sampling technique, and population. Additional study investigated the level of digital literacy skills possessed by academic librarians in Nigerian universities[160]. The study raised four specific objectives to address this issue. The sample size was made up of a hundred (100) library professionals of federal university from South- South Nigeria. Findings from the study revealed low level of digital literacy skills among the sample studied.

The researchers also found digital literacy skills crucial for library services delivery in the 21st century. The result of the study also revealed that challenges that ranges from finance to lack of interest in digital literacy skills on the part of library professionals limit the acquisition of digital literacy skills. Recommendations based on findings of the study stated that policy makers should take practical steps aimed at encouraging digital literacy skill acquisition among library professionals in Nigeria. The study is related to this present research as it covers digital literacy skills possessed by academic librarians although they differ in terms research design geographical scope, sample and sampling technique, and population.

In another study, evaluated the digital literacy skills possessed by paraprofessionals in the

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execution of their job in academic library in South-west Nigeria[161]. Four research objectives guided the conduct of the study. The target population comprised 16 paraprofessionals working in the library using a complete enumeration because of the small population. The descriptive survey design was employed. The instrument for data collection was structured questionnaire based on Likert Scale. All copies of the questionnaire administered were retrieved. The statistical tools used for the study are frequency distribution, percentages, mean scores and standard deviation. The study was limited to Olabisi Onabanjo University Library in South-west Nigeria. The study revealed proficiency in digital technology and use of digital devices by majority of the respondents for personal and official activities. However, the respondents were not too familiar with the use of technological tools and devices relevant to their work. The study recommended that paraprofessionals be exposed to continuous training to cope with the demands of the digital age and library managers should have good training and development policies for staff to promote and boost quality library services and job performance. The study is related to this present research as it covers digital literacy skills possessed by paraprofessionals in the execution of their job in academic library. This study and the present study do not share similar research design. Other differences are observed in geographical scope, sample and sampling technique, and population.

Similarly in another investigation conducted on librarians' digital literacy skills and services delivery in academic libraries in Taraba State, Nigeria and their services delivery[162]. The correlational design was adopted in studying 112 professional library personnel drawn from 11 academic libraries in Taraba State. A researcher-made questionnaire was used for data collection. 112 copies of the questionnaire were administered but 109 were retrieved. Data was analysed using descriptive and inferential statistics. The single null hypothesis was tested at 0.05 level of significance using the linear regression. Consequently, the strength of relationship between

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variables was decided using the Creswell correlational ranking and results presented in frequency tables. Findings of the study shows that digital literacy skills possessed by the librarians was low as they were only skilful in using the Internet to search and communicate information, conduct website evaluation and use Boolean logic, among other skills.

Result showed a correlational value of 0.17 and hypothesis yielded a p-value of 0.08. This shows that there is a positive very low and insignificant relationship between digital literacy of librarians and services delivery in academic libraries in Taraba State, Nigeria. Based on the result of insignificant relationship between the digital literacy skills of librarians and services delivery, the study recommends that library authorities should intensify efforts in creating the understanding of digital literacy skills, their essence and application to enable the librarians to acquire more of the skills as well as apply them in the discharge of their duties, among other things. The study is related to this present research as it covers librarians' digital literacy skills and services delivery in academic libraries. Nonetheless, both studies employed a correlational research design while they are differences in terms of geographical scope, sample and sampling technique, and population.

Another study investigated the digital literacy skills among Certified Librarians in Nigerian libraries[163]. The objectives of the study were to identify the levels digital literacy skills possessed by certified librarians in Nigeria libraries, how the certified librarians in Nigeria libraries acquire their digital literacy skills and the challenges faced by certified librarians in Nigeria libraries to acquiring digital literacy skills. A social survey approach was used to conduct this research. The questionnaire was used as a research tool in this study. For examination and expertise assessment. The instrument's performance was measured using the test retests technique, which yielded a reliability value of 0.85. The study's participants were 502 Nigerian certified librarians from various libraries and institutions who were entered by the Librarians' Registration Council of

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Nigeria (LRCN) on November 24th, 2021. The librarians who took part in the survey were chosen using a rigorous random sample method. One out of every three librarians being admitted on that day was given the questionnaire. A total of 450 surveys were issued to librarians, with 391 completed and returned, reflecting an 86.8% response rate. The study was carried out using the Statistical Package for the Social Sciences (SPSS) application software, with simple percentages chosen for easier analysis and interpretation. The study findings show that the majority of Certified Librarians have digital literacy skills that they sponsor themselves for digital literacy training, and that some acquired digital literacy skills through trial and error among others.

The study concluded with a call for certified librarians in Nigerian libraries to double their efforts to be digitally up-to-date in order to save the profession's future and contribute as much as possible to Nigeria's digital technology revival. The study recommended that organisations and libraries management should design and facilitate digital literacy programmes to educate, train and retraining certified librarians so as to develop their knowledge and practical skills on the use of digital technologies. Effort to improve electricity power supply in order to enable libraries and their scholars maximize the use of their digital tools for the advancement of their digital literacy skills was also recommended. The study is related to this present research because it covers digital literacy skills among certified librarians in Nigerian libraries. This study and the present study do not share similar research design. Other differences are observed in geographical scope, sample and sampling technique, and population.

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2.3.4 Facilitating Conditions and Attitude-towards-use of Artificial Intelligence Library Personnel

A study conducted on facilitation or hindrance; the contingent effect of organization artificial intelligence adoption on proactive career behavior, explored the underlying mechanism through

which organizational AI adoption influences employees' proactive career behavior[164]. In so doing, a three-wave time-lagged survey involving 348 employees from three hotels and five advanced manufacturing enterprises in Chengdu, China, was conducted. The study employed a quasi-experimental design. The population comprised of 348 employees from three hotels and five manufacturing companies in China. A convenient sampling technique was used for this study. The findings revealed that organizational AI adoption led to a reduction in employees' self-perceived employability. The prominence of an employee's future work self-salience was found to be a determining factor in how their self-perceived employability influenced proactive career behaviours.

Specifically, this impact manifested negative for employees exhibiting high levels of future work self-salience, while it appears positive for those with low levels. Finally, this study confirmed the moderating role of future work self-salience in the indirect impact of organizational AI adoption on proactive career behaviour through self-perceived employability. Our study underscores the significance of considering individual characteristics, such as future work self-salience, in analysing how organizational AI adoption affects employees' career-related behaviours. The study is related to this present research as deals with facilitation condition associated with the use of AI. This study and the present study do not share similar research design. Other differences are observed in geographical and conceptual scope, sample and sampling technique, and population.

Another study investigated the UTAUT as a model for understanding intention to adopt AI and related technologies among librarians in North America[165]. This study further explored the intention to adopt various AI and related technologies by academic and public librarians. Three research objectives guided the conduct of the study. Survey research design was used for this study. A survey was dispersed to various libraries to collect input on issues surrounding AI attitude and

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intentions among librarians in North America. The questionnaire was built around the adopted and revised UTAUT, modifying some factors and wording to better reflect the uniqueness of the technologies of interest as relevant to libraries. The study also utilized the Unified Theory of Acceptance and Use of Technology (UTAUT) as a framework and Performed Structural Equation Modelling (SEM) and related statistical analyses (using SPSS and AMOS). The findings confirm that the UTAUT can partially predict the likelihood of Motivation-for- acceptance and attitude-toward-use of AI and related technologies adoption intentions among library personnel. The model revealed that performance expectancy (PE) and attitude toward use (ATU) of AI had significant effects on librarians' intention to adopt AI while social influence (SI) and effort expectancy (EE) did not. The study concluded that UTAUT is a viable integrated theoretical framework that, when properly designed and executed within a study. The study is related to this present research as deals with facilitation condition associated with the use of AI.

Another research investigated the motivation to use AI technologies among librarians in Edo and Delta States[11]. Two research objectives and questions guided the conduct of the study. The study observed that the motivation to use artificial intelligence (AI) technologies are those factors that influenced users' drive to actually use AI technologies. Descriptive survey research design was adopted. The population for the study consists of 125 librarians in libraries of universities in Edo and Delta States, Nigeria. In so doing, a total enumerative sampling technique was adopted because the population size was manageable and small. The instrument for data collection was a questionnaire adapted from various validated and tested studies. Collected data was analysed using both inferential and descriptive statistics and the hypothesis was tested using linear regression analysis. Findings of the study revealed that digital skill had significant but weak influence on motivation to use AI technologies among librarians. The study concluded that digital skill

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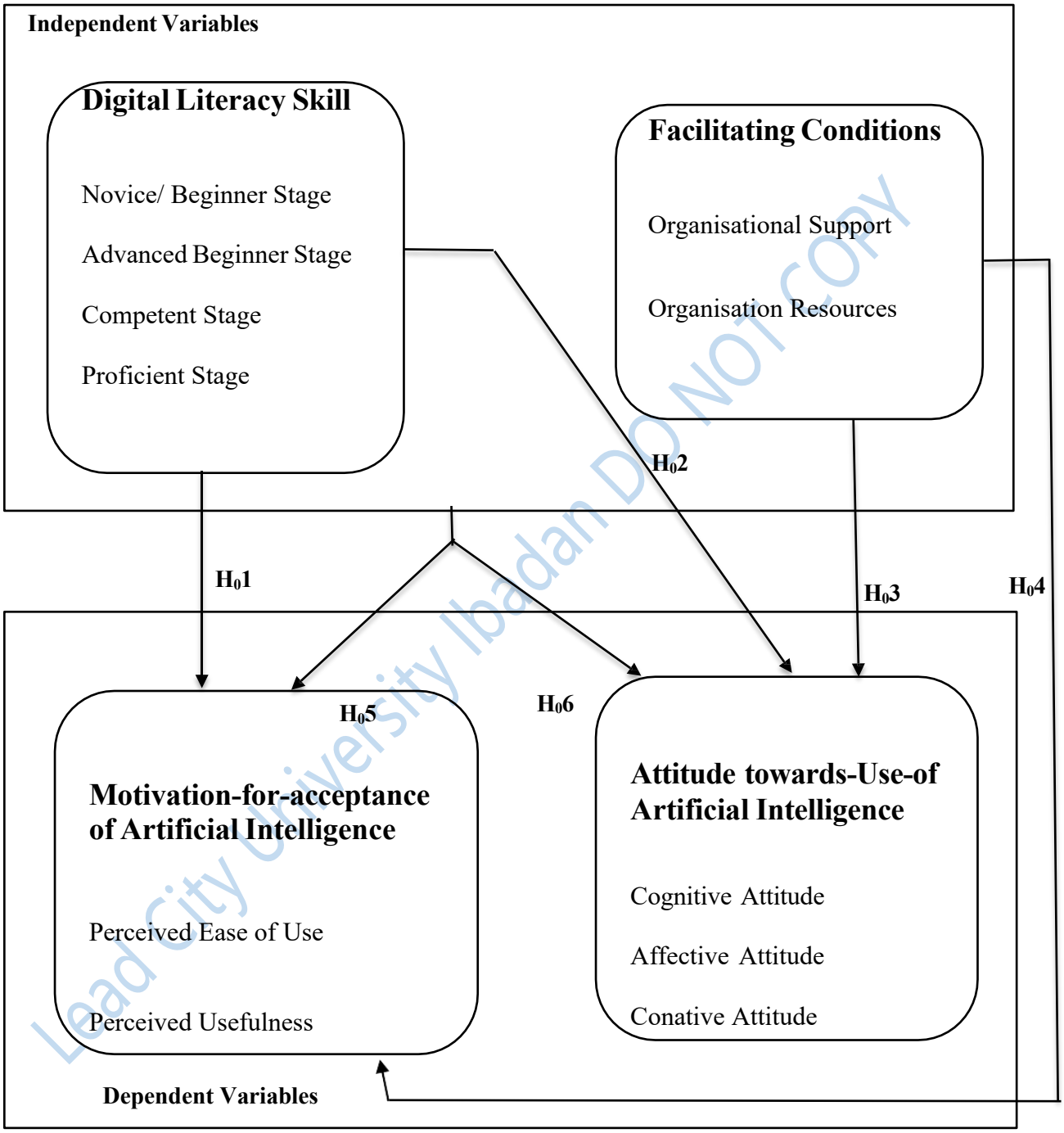
influenced motivation to use AI technologies and recommended that there should be more awareness of AI among librarians. The study also recommended that librarians should improve their digital skill through consistent training and retraining programs so as to be efficient in the application of AI to library service delivery. Although this study and the present study do not share similar research design, they are somewhat related.

In another investigation to study the influence of technological readiness on adoption of artificial intelligence technology among librarians in Nigeria[166]. Two research objectives guided the study. The study examined the level of motivation to use artificial intelligence technologies by librarians and the level of digital competency among librarians. The study adopted a descriptive research design. The population of the study comprises fifty-two (52) librarians in academic institutions in Nigeria. The instrument for data collection was a structured questionnaire which was used to elicit responses on the prevalent AI technology available for adoption among librarians as well as the level of librarian technological readiness. The collected data were analysed using descriptive statistic (such as frequency distribution and mean) and regression analysis.

Findings from the study shows that about two-third of the sampled librarians have adopted artificial intelligence technology for a task. The prevalent artificial intelligence technologies available for adoption among the fifty-two sampled librarians is Google Assistant. Findings also reveal that there is a higher level of agreement on the motivating factors than inhibiting factors for level of librarians' technological readiness in Nigeria. The result also indicate that technological readiness does not significantly influence the adoption of artificial intelligence among librarians in Nigeria. The study is related to this present research as it deals with technological readiness associated with the use of AI. This study and the present study do not share similar research design. Other differences observed are in geographical and conceptual scope, population and sample

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2.4 Conceptual Model



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Figure 2.8: Model of Digital Literacy Skill, Facilitating Condition, Motivation-for-acceptance and Attitude-towards-use of Artificial Intelligence

Source: Researcher's Conceptual Model 2024

From constructs in the models and theories that underpins this study on Digital Literacy Skill and Facilitating Conditions as correlate of Motivation-for-acceptance and Attitude-towards-use of Artificial Intelligence by Library Personnel in South-west universities, Nigeria, a conceptual model made up of the independents and dependent variables in this study was developed. The conceptual model shows the nexus between dependents and independent variables of the research. The dependents variables are Motivation-for-acceptance and Attitude-towards-use of artificial intelligence by library personnel while the independents variables comprised the digital literacy skill and facilitating conditions. For the dependent variable Motivation-for-acceptance of artificial intelligence the specific components that will be examined are Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) while the specific components of Attitude-towards-use of artificial intelligence that will be examined include Cognitive, Affective and Conative Attitudes of library personnel.

For the independent variables, Novice, Advanced Beginner, Competent, Proficient, and Expert stages formed the specific components of digital literacy skill in the study while facilitating conditions components comprise of organisational support and organisational resources segregated into human resources (trainers in the use of artificial intelligence) and non-human resources (organisational infrastructure). The movements of the arrows from the left to the right indicate the relationship among the variables in the model with one arrow moving from each of the independent variables to the dependent variable. The direction of each arrow shows that the independent variable determines the dependent variable. Furthermore, the movement of the arrow between the independent variables shows that there is a nexus between them and the same also goes for the dependent variables. In other words, the model assumes that the combination of digital literacy skill and facilitating conditions are related and have significant impact on library personnel attitude

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towards AI. Attitude of library personnel to AI is also related with the extent to which AI will be adopted for library service delivery and operation by library personnel.

2.5 Summary of the Reviewed Literature

The literature review has shown that artificial intelligence represents a wide range of tools that are available to library personnel to enhance their services and meet the expectation of their numerous clienteles. AI-driven technologies have become essential for the opportunities they offer for libraries to provide the cutting-edge information services demanded by academic library users. However, there seem to be a confusion on the role of artificial intelligence in libraries with many librarians perceiving AI as job snatching robots coming to replace librarians. This has led to some trepidations and reluctance to accept the use of artificial intelligence among library personnel. Library managers who are often short staffed and eager to provide the best services to their clients are willing to accept artificial intelligence probably because their role as administrators is not threatened by 'robots' which purpose will be to perform routine duties.

The perception of artificial intelligence has also affected attitude of librarians. It is obvious that what is regarded as artificial intelligence is so wide and vaguely defined that only those librarians with an appreciable level of knowledge about the scope and current capabilities of artificial intelligence can form a positive attitude towards its use. It is obvious from the literature that librarians who view previous information and communication positively are also likely to have positive view of artificial intelligence. However, existing literature in the field of librarianship has not been able to properly distinguish pure AI tools from mere mechanical apparatuses such as robots with simple functionalities. For instance, few studies have focused on intelligent agents such as chatbots capable of learning from humans and improving interaction without the input of

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any human beyond the initial programming.

The reviewed literature also shows that digital literacy skill of library personnel, especially in developing countries, is on the rise although it has not reached the advanced level required to effectively handle artificial intelligence tool for library services provisions. Literature reviewed showed that factors such as the lack of the necessary infrastructural facilities and proper training on the use of modern technology (i.e., facilitating conditions) have limited the opportunities for librarians to acquire or update their digital literacy skills. This shortcoming is also evidence in the conceptualization of digital literacy by some scholars as what is put forward as digital literacy skills are mainly computer operating skills. The lack of digital literacy skill is also a determining factor in the acceptance and use of artificial intelligence by librarians. The literature shows that many librarians are afraid of artificial intelligence tools because they do not want their lack of skills to be exposed. On the other hand, librarians with digital literacy skills are open to the acceptance and use of artificial intelligence in their libraries as they see them as a tool to enhance their productivity and not as rivals.

Overall, the obvious is that research on the application of artificial intelligence in libraries is an emerging field. The studies conducted on the subject have mostly been exploratory focusing on the potentials and attitudes of librarians. Given that technology adoption is a complex issue, it is essential to examine the factors such as digital literacy skills librarians and facilitating conditions provided by librarians as factors in the successful adoption and integration of artificial intelligence tool in academic libraries. This study which combines such variables as digital literacy skills and facilitating conditions will therefore fill this gap existing in literature.

Additionally, while several studies have explored the digital literacy skill of library personnel in various contexts, there remains a gap in the literature concerning this aspect specifically within the

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universities of the South-west region of Nigeria. Previous research has predominantly focused on general digital literacy levels without delving into the specific competencies required for library personnel in the academic setting. Therefore, there is a need for further investigation to understand the digital literacy levels and specific competencies required for effective library management in this particular study area. On the other hand, existing literature has examined factors influencing the motivation for acceptance of artificial intelligence (AI) in various fields, including libraries. However, there is a dearth of research specifically addressing the facilitating conditions available for the motivation for acceptance of AI among library personnel, especially within the South-west universities of Nigeria. Therefore, this represents a significant gap in the current literature that warrants further investigation.

Similarly, while there have been studies investigating the attitude towards AI adoption in libraries, the focus on library personnel's attitudes, particularly in the South-west region of Nigeria, remains limited. Previous research has often overlooked the unique cultural, organizational, and contextual factors that may influence library personnel's attitudes towards AI adoption in this specific geographical area. Consequently, there is a gap in the literature regarding the attitudes of library personnel towards AI use, particularly in the South-west universities of Nigeria, which necessitates further exploration. Despite the growing interest in AI adoption in libraries, there is a gap in the literature concerning the motivation for acceptance of AI among library personnel, particularly in the South-west universities of Nigeria. While some studies have examined factors influencing technology acceptance, there remains a lack of comprehensive understanding regarding the specific motivations driving library personnel's acceptance of AI technologies in this particular geographical context. Therefore, further research is needed to explore the motivations for AI acceptance among library personnel in the South-west region of Nigeria, considering the unique cultural and organizational factors that may influence their decisions.

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Given the foregoing, most of the studies reviewed differed in terms of research design, population, sample, and sampling technologies. Some studies employed correlation research designs similar to the present study. In terms of geographical scope, a good number of studies were conducted in Nigeria, with the majority in the South-West, South-South, and North East Zones. While many studies employed questionnaires which the present study intends to use, none comprehensively captured digital literacy skill and facilitating conditions as correlates of attitude towards use and motivation for acceptance of AI by library personnel in South-west Nigeria. Hence, there is a clear gap in the literature that this present study aims to address by focusing on this specific geographical area and comprehensively examining these factors.

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Chapter Three

Methodology

3.1 Research Design

The descriptive survey design and concurrent mixed methods research approach was adopted for this study. Descriptive survey analytically and scientifically studies concepts, objects, conditions, attitudes, opinions, ideas or subjects with the aim of providing accurate description or information about the nature and extent. The mixed methods research design is a technique for collecting, analysing, and mingling both quantitative and qualitative research methods in a study to understand research problem(s). Descriptive survey design studies describe the constructs and the influences that naturally exist between and among them[1],[2]. The research design was chosen because it explores and establishes possible influence of one variable on another. It is known for explicitness of data collection procedure and also suitable for extrapolation as a guide to action[3]. The design was helpful as it enables the researcher to obtain the needed primary data directly from respondents. The research design further helped the study establish the influence of digital literacy skill and facilitating conditions on motivation-for- acceptance and attitude towards-use of artificial intelligence university libraries in South-west, Nigeria.

3.2 Population of the Study

The population of this study consist of library personnel in all the universities in South-West, Nigeria. There are seven (7) federal, nine (9) state and thirty (30) private owned universities in South-west, Nigeria. Presently, there are one hundred and one (101) librarians and eighty-eight (88) paraprofessionals in the federal universities making a total of one hundred and eighty-nine

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(189) library personnel. The State funded universities have ninety-one (91) librarians and one hundred and eight (108) paraprofessionals; giving a total number of one hundred and ninety-nine (199) library personnel while the private funded universities have one hundred and thirty-eight (138) librarians and ninety-six (96) paraprofessionals making a total of two hundred and thirty-four (234) library personnel. There are thus six hundred and twenty-two (622) library personnel in the South-West universities, Nigeria as shown in Table 3.1.

Table 3.1: Estimated Library Personnel in South-West Universities, Nigeria

S/N	University Ownership	University	Year of establish-ment	No. of Librarians	No. of Para-professionals	Total
1.	**Federal**	Federal University of Agriculture, Abeokuta, Ogun	1988	25	13	38
2.		Federal University, Oye, Ekiti	2011	4	8	12
3.		Federal University of Technology, Akure. Ondo	**1981**	13	15	28
4.		National Open University of Nigeria, South-west	2002	12	3	15
5.		Obafemi Awolowo University, Ile-Ife. Osun	**1961**	17	16	33
6.		University of Ibadan, Oyo	**1948**	20	22	42
7.		University of Lagos, Akoka. Lagos.	**1962**	10	11	21
8.	**State**	Adekunle Ajasin University, Akungba- Akoko. Ondo	1999	6	9	15
9.		Ekiti State University, Ado Ekiti	**1982**	14	17	31
10.		Ladoke Akintola University of Technology, Ogbomoso, Oyo	**1990**	17	24	41
11.		Lagos State University, Lagos	**1983**	22	31	53
12.		Olabisi Onabanjo University. Ago-Iwoye, Ogun.	**1982**	11	16	27
13.		Ondo State University of Technology	2008	5	2	7
14.		Osun State University, Osogbo, Osun	2006	2	0	2

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S/N	University Ownership	University	Year of Establish-ment	No. of Librarians	No. of Para-professionals	Total
15.		Tai Solarin University of Education, Ijagun, Ogun	2005	10	5	15
16.		University of Medical Sciences, Ondo State	2015	4	4	8
17.	**Private**	Achievers University, Owo, Ondo	2007	3	2	5
18.		Adeleke University, Ede, Osun	2010	7	5	12
19.		Afe Babalola University, Ado-Ekiti, Ekiti	2009	12	3	15
20.		Ajayi Crowther University ,Oyo	2005	9	5	14
21.		Anchor University, Ayobo, Lagos	2014	3	1	4
22.		Augustine University, Epe, Lagos		3	1	4
23.		Babcock University, Ilishan, Ogun	**1999**	4	5	9
24.		Bells University of Technology, Ota, Ogun	2004	9	1	10
25.		Bowen University, Iwo, Osun	**2001**	6	7	13
26.		CALEB University, Ayobo, Lagos	2008	3	4	7
27.		Chrisland University, Abeokuta, Ogun	2015	2	0	2
28.		Christopher University, Mowe, Ogun	2015	1	1	1
29.		Covenant University, Ota, Ogun	**2002**	5	5	10
30.		Crawford University, Igbesa, Ogun	2005	2	3	5
31.		Crescent University, Abeokuta, Ogun	2005	4	6	10
32.		Dominican University, Ibadan, Oyo	2016	1	1	2
33.		Elizade University, Ilara-Mokin, Ondo	2012	5	1	6
34.		Fountain University, Osogbo, Osun	2007	6	7	13
35.		Hallmark University, Itele-Ijebu, Ogun	2015	2	0	2
36.		Joseph Ayo Babalola University, Ikeji-Arakeji, Osun	2006	12	3	15
37.		Kings University, Odeomu, Osun	2015	1	2	3
38.		Kola Daisi University, Ibadan, Oyo	2015	1	1	1

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S/N	University Ownership	University	Year of Establish-ment	No. of Librarians	No. of Para-professionals	Total
39.		Lead City University, Ibadan, Oyo	2015	9	6	15
40.		McPherson University, Ajebo, Ogun	2012	2	1	3
41.		Mountain Top University, Makogi Oba, Ogun	2015	3	2	5
42.		Oduduwa University, Ipetumodu, Osun	2009	6	3	9
43.		Pan Atlantic University, Lagos	**2002**	5	4	9
44.		Redeemer's University, Ede, Osun	2005	8	14	22
45.		South-western University, Okun-Owa, Ogun	2012	1	0	1
46.		Wesley University, Ondo, Ondo	2007	3	2	5
		Total		**330**	**292**	**622**

Source*:* Preliminary searches by the researcher, 2025

3.3 Sample Size and Sampling Technique

This study employed the multistage sampling technique. In the first state, respondents were stratified along federal, state, and private owned universities and four universities, with the oldest year of establishment, were purposively selected in the second stage. The study adopted the purposive sampling technique at this stage because the researcher believes that older generation universities are well-established with seasoned library personnel and resources to adopt AI usage for library services. Hence, early generation universities in each stratum were purposively selected Consequently, in the third stage, the probability proportionate to size technique was used to select the sample size from each institution. This was done using the Krejcie and Morgan formula for calculating the sample size. The formula states that:

$$n = (\chi^2 * N * P * (1-P)) / ((e^2) * (N-1) + (\chi^2 * P * (1-P)),$$

where:

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n: sample size,

N: population size (for each institution),

P: population proportion = 0.5 (recommended value for maximum sample size),

e: Acceptable error margin = 0.05, and

χ^2: Chi-square value = 3.841 (for 95% confidence level and 1 degree of freedom)

Following the use of the formula to calculate the sample size for each institution, the resulting sample size is presented in Table 3.2 with a total sample of 251. This sample size aligns with the recommended minimum sample size of 242 for a population of about 650 by Krejcie and Morgan[4].

Table 3.2: Sample Size Calculation for each Institution

S/n	University	Calculations	Result
1.	University of Ibadan	3.841^2x42x0,5x (1-0.5)/0.05^2x (42-1) + (3.841x0.54x (1-0.5)) =144.9/3.791	38
2.	Obafemi Awolowo University	3.841^2x33x0.5x (1-0.5)/0.05^2x (33-1) + (3.841x0.54x (1-0.5)) =102.7/3.768	27
3.	University of Lagos	3.841^2x21x0.5x (1-0.5)/0.05^2x (21-1) + (3.841^2x0.54x (1-0.5)) =72.455/3.738	19
4.	Federal University of Technology	3.841^2x28x0.5x (1-0.5)/0.05^2x (28-1) + (3.841^2x0.54x (1-0.5)) =79.273/3.756	21
5.	Olabisi Onabanjo University	3.841^2x20x0.5x (1-0.5)/0.05^2x (20-1) + (3.841^2x0.54x (1-0.5)) =64.76/3.736	17
6.	Ekiti State University	3.841^2x27x0.5x (1-0.5)/0.05^2x (27-1) + (3.841^2x0.54x (1-0.5)) =75.585/3.753	20
7.	Lagos State University	=3.841^2x53x0.5x (1-0.5)/0.05^2x (53-1) + (3.841^2x0.54x (1-0.5)) =156.481/3.81	41
8.	Ladoke Akintola University of Technology	3.841^2x41x0.5x (1-0.5)/0.05^2x (41-1) + (3.841^2x0.54x (1-0.5)) =115.22/3.788	30

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9.	Babcock University	3.841^2x10x0.5x (1-0.5)/0.05^2x (10-1) + (3.841^2x0.54x (1-0.5)) =33.883/3.71	9
10.	Bowen University	3.841^2x13x0.5x (1-0.5)/0.05^2x (13-1) + (3.841^2x0.54x (1-0.5)) =45.948/3.698	12
11.	Covenant University	3.841^2x 9 x0.5x (1-0.5)/0.05^2x (9-1) + (3.841^2x0.54x (1-0.5)) =31.195/3.688	8
12.	Pan Atlantic University	3.841^2x10 x0.5x (1-0.5)/0.05^2x (10-1) + (3.841^2x0.54x (1-0.5)) =33.883/3.711	9

Source: Researcher, 2025

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Table 3.3: Sample Size

S/N	University Ownership	University	Year of Establishment	Population (Librarians + Paraprofessionals	Sample Size
1.	Federal	University of Ibadan, Oyo	1948	42	38
2.		Obafemi Awolowo University, Ile-Ife. Osun	1961	33	27
3.		University of Lagos, Akoka. Lagos.	1962	21	19
4.		Federal University of Technology, Akure. Ondo	1981	28	21
5.	State	Olabisi Onabanjo University. Ago-Iwoye, Ogun.	1982	20	17
6.		Ekiti State University, Ado Ekiti	1982	27	20
7		Lagos State University	1983	53	41
8.		Ladoke Akintola University of Technology, Ogbomoso, Oyo	1990	41	30
9.	Private	Babcock University, Ilishan, Ogun	1999	10	9
10.		Bowen University, Iwo, Osun	2001	13	12
11.		Covenant University, Ota, Ogun	2002	9	8
12		Pan Atlantic University	2002	10	9
			Total	**307**	**251**

Source: Researcher, 2025

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3.4 Description of the Research Instrument

The research instrument that was used for data collection in this study is the structured questionnaire and interview, via a structured interview guide; for the quantitative and qualitative analysis respectively**.** The structured questionnaire is a research instrument that ensures that answers are given in relevance to the purpose of enquiry. This study questionnaire is tagged "Questionnaire on Digital Literacy Skill, Facilitating Conditions and Motivation-for acceptance of

and Attitude-towards-use of Artificial Intelligence (DLSFCMAATUAI). The questionnaire is arranged in sections and develop base on the conceptualisation and development work of previous literature[5;6;7]. The section A of the questionnaire elicits demographic information from library personnel on their specific university, gender, marital status, age range, educational qualification, subject background, department, position, and length of service.

Section B contains ten (10) items on motivation-for-acceptance of AI by Library personnel in university libraries in South-west, Nigeria adapted from related study[8]. Five of the items sought to find out the perceived ease of use of artificial intelligence while the rest of the question sought answers on perceived usefulness. A four-point Likert scale of Strongly Agree (SA =4), Agree (A =3), Strongly Disagree (SD =2) and Disagree (D =1) was used. The section contains items such as "My interaction with AI processes has been easy" and "Artificial intelligence has improved the quality of library service in my university library."

Section C covers attitude-towards-use of artificial intelligence by library personnel in university libraries. The eighteen (18) items presented in this section were adapted from related studies[9,5]. The items were divided into the three indicators of attitude towards the use of artificial intelligence which are cognitive (six items), affective (six items) and conative (six items). The scale measures positive and negative attitudes on each of the indicator. A four (4) point Likert scale of Strongly Agree (SA =4), Agree (A =3), Strongly Disagree (SD =2) and Disagree (D =1) was used. The section has question such as "I am intellectual enough to master any AI needed for information services delivery" and "I resent using AI technologies as library personnel."

Section D section collects data on the digital literacy skill of library personnel. A standardised scale, adapted from "Measuring Digital Skills: From Digital Skills to Tangible Outcomes"[10]. There

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were twenty (20) items presented in this section. The items were divided into the five stages indicators of Digital Literacy Skill (DLS) which are Novice/Beginner (four items), Advanced Beginner (four items), Competent (four items), Proficient (four items), and Expert stages (four items). All the items were presented with a four-point Likert scale of Strongly Agree (S =4), Agree (A =3), Strongly Disagree (SD =2) and Disagree (D =1). The section has items such as "My Knowledge of using AI platforms" and "My Ability to use AI technologies for basic library services and my professional development."

Section E elicits information on facilitating conditions. The twelve (12) items presented in this section were adapted from related studies[11, 6]. The items were divided into the two indicators of facilitating conditions which are organisational support (six items) and organisational support (six items). A four-point Likert scale of Strongly Agree (SA =4), Agree (A =3), Strongly Disagree (SD =2) and Disagree (D =1) was used. The section contains items such as "My university management supports the use of AI for library services and my professional development" and "My university management provides facilities to encourage the use of AI technologies for library service delivery and professional development."

3.5 Validity of the Research Instrument

The face and construct validity of the research instruments was ascertained by the scrutiny for necessary corrections by the researcher's supervisor and other experts in the department of Library and Information Science, within and outside Lead City University. The Departmental Committee for thesis also scrutinised the instruments before its approval in order to standardise it and make it more adequately fit to elicit respondents' responses for the study and also reduce the elements of bias, if any, from the research instruments.

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3.6 Reliability of the Research Instrument

The reliability of the questionnaire was ascertained through a pre-test carried out by administering thirty copies of the questionnaire on library personnel at the University of Benin, Edo State (UNIBEN), which is in the South-South geo-political zone of Nigeria. The university was selected because of the geographical location, which is outside the South-west geo-political zone that the study covered. The Cronbach's Alpha method was used to establish the reliability coefficient of sections B, C, D and E of the questionnaire as follows, Section B: 0.845, Section C: 0.792, Section D: 0.804 and Section E: 0.879. The Cronbach-alpha score of 0.6 and above is considered reliable enough for data collection in any research[12]. The Cronbach alpha was the basis of consideration whether the research instrument is good or not, i.e. to measure the internal consistency of the research instrument. The overall reliability coefficient was 0.85.

3.7 Method of Data Collection

Data for the study was collected via the vetted research instruments, the questionnaire and the interview guide for the study. The help of colleagues and two research assistants, who were trained for one week was enlisted for the distribution of questionnaires to avoid discrepancies as well as hasten the administration period of the questionnaires. The questionnaires were administered physically to library personnel in the participating universities libraries while the University Librarians (library heads and administrators) were interviewed by the researcher.

3.8 Method of Data Analysis

The analysis of collected data was based on the use of simple descriptive statistical analysis of frequency counts and percentages, linear and multiply regression. Simple descriptive statistical analysis of frequency counts and percentages was used for the demographic analysis of respondents.

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Descriptive statistical tools of Mean and Standard Deviation, with the aid of Statistical Package for the Social Sciences (SPSS) software, was use to analyse the four research questions that guided the study. Linear Regression analysis was used to test hypotheses one, two tree and four. Multiple regression analysis was used for hypothesis five and six while content analysis was employed for the interview. The results are presented in figures and tables. Inferences and recommendations were also be drawn from them.

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Chapter Four
Results and Discussion of Findings

This chapter focuses on the presentation of collected data analysis and interpretation of results. The study examined digital literacy skill and facilitating conditions as predictors of motivation-for-acceptance and attitude-towards-use of artificial intelligence by library personnel in south-west universities, Nigeria. This reflects that the study has two independent variables which are digital literacy skill and facilitating conditions and also two dependent variables, that is of motivation-for-acceptance and attitude-towards-use of artificial intelligence. The presented data analysis and interpretation of results is guided by research questions and formulated hypotheses which stems from the objectives of the study. The first section, which is descriptive, shows the analysis of demographic data using tables with frequencies and percentages. The second section shows the analysis of research questions using tables with frequencies, percentages, and the mean distribution of the responses. The third section focuses on testing hypotheses using regression analysis while the final section covers the discussion of findings.

4.1 Demographic Data Analysis

Table 4.1: Questionnaire Distribution and Response Rate

S/n	Institution	Response received/ Frequency (f)	Percentage (%)
1.	Obafemi Awolowo University, Ile-Ife	26	10.5
2.	University of Ibadan	33	13.4
3.	University of Lagos	16	6.5
4.	Federal University of Technology, Akure	23	9.3
5.	Olabisi Onabanjo University, Ago-Iwoye	16	6.5
6.	Ladoke Akintola University Ogbomoso	33	13.4

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S/n	Institution	Response received/ Frequency (f)	Percentage (%)
7.	Ekiti State University	24	9.7
8.	Lagos State University	41	16.6
9.	Bowen University Iwo	12	4.9
10.	Covenant University, Ota	7	2.8
11.	Pan Atlantic University Lagos	8	3.2
12.	Babcock University, Ilisan-Remo	8	3.2
	Total	247	100.0
	Summary		
	Details	**Frequency**	**Percentage (%)**
	Total distributed questionnaires	251	100%
	Questionnaires returned	247	98.4 %
	Questionnaires not returned	4	1.6%
	Questionnaires analysed	247	98.4%

Source: Researcher, 2025

Table 4.1 shows the combined questionnaire response and return rates by each of the institution. A total of two hundred and fifty-one (251) questionnaires were administered to library personnel of which two hundred and forty-seven (247) were returned. All of the returned questionnaire were certified dully filled and considered fit for analysis. These questionnaire account 98.4% for questionnaire response rate.

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Table 4.2: Demographic characteristics of respondents

Demography	Components	Frequency	Percentages
Gender	Male	128	44.3
	Female	161	55.7
Age Group	21 - 26 yrs	52	18.1
	27 - 32 yrs	26	9.1
	33 - 38 yrs	55	19.2
	39 - 44 yrs	58	20.2
	45 - 50 yrs	55	19.2
	50 years and above	41	14.3
Marital Status	Single	81	28.5
	Married	196	69.0
	Divorced	4	1.4
	Widowed	3	1.1
Highest Academic Qualification	ND	17	5.9
	HND	17	5.9
	B.A.	23	8.0
	B.Sc.	54	18.8
	BLIS	59	20.5
	MLS/MLIS	72	25.0
	M. Inf. Sc.	19	6.6
	PhD	25	8.7
	Others	2	0.7
Position	Library Officer	45	16.2
	Higher/Senior Library Officer	47	16.9
	Principal Library Officer	32	11.5
	Chief Library Officer	15	5.4
	Assistant Librarian	33	11.9
	Librarian II	18	6.5

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Demography	Components	Frequency	Percentages
	Librarian I	31	11.2
	Senior Librarian	23	8.3
	Principal Librarian	19	6.8
	DUL	15	5.4
Length of service	1 - 5 yrs	73	26.2
	6 - 10 yrs	51	18.3
	11 - 15 yrs	46	16.5
	16 - 20 yrs	65	23.3
	21 - 25 yrs	29	10.4
	26 - 30 yrs	15	5.4

Source: Researcher's Field Survey, 2025

Table 4.2 reports the frequency distribution and the corresponding percentages of the respondents' demographic characteristics for the study. As shown in the Table, most respondents to the survey were females (56.1%), while 43.9% were males. This indicates that there were more females in the practice of librarianship in South West Nigeria. The Table also shows the age distribution of the respondents. Most respondents in the study were within the 39 – 44 years age group (n = 52, 21.2%), indicating a higher rate of elderly practitioners in the field. This is followed by respondents in the 45 – 50 (n = 47, 19.2%) and 33 – 38 (n = 39, 15.9%) years age groups.

The Table, furthermore, revealed that the majority of the respondents were married (n = 163, 67.9%). It also showed that most respondents in the study have Bachelor's Degree (49.8%), including Bachelors of Arts, Science, and Library and Information Science. This was followed by those with Master's Degree (30.6%), including MLS/MLIS and M. Information Science. Only 8.2% of the respondents reported having Doctoral degrees. In addition, the study showed that about half (50.8%) of the respondents were in the Library Officer cadre. This includes Library Officers,

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Higher/Senior Library Officers, Principal Library Officers, and Chief Library Officers. There were more Librarian I than any other category of academic librarians who participated in the study. Concerning the length of service of the respondent, the majority have only been working in the library for 1 – 5 years (29.0%). This was followed by those who have been in service for 16 – 20 years (23.5%) and 6 – 10 years (16.4%).

Twelve (12) university librarians were slated to participated in the interview but three were unreachable. Two hundred and fifty-one (251) library staff were recruited for the study. Out of these, 247 completed and returned the research instrument, resulting in a response rate of 98.4% of the study's sample size. The majority of the respondents were from the Lagos State University (16.6%), Ladoke Akintola University (13.4%), and the University of Ibadan (13.4%). For the qualitative component of the study, a total of 9 interviews were conducted with heads of selected libraries. All the interviewees were married, 60% of them were females, while the rest were males. All the respondents were adults within the age range of 42 – 55 years, and the majority of them were Master's Degree holders, with only three possessing a Doctoral degree in Library and Information Science. The interviewees were coded from University Librarian 1 (UL1) to University Librarian 9 (UL9) in this report to ensure appropriate anonymity.

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4.2 Presentation of Data

4.2.1: Research Questions

Research Question 1: What is the level of motivation-for-acceptance of artificial intelligence by library personnel in universities in South-West, Nigeria?

Table 4.3 Analysis of responses on the level of motivation-for-acceptance of artificial intelligence by library personnel in universities in South-West, Nigeria

S/N	Statements	VL	L	H	VH	$\bar{X}$	SD
	Perceived Ease of Use	8 (3.3%)	16 (6.6%)	128 (52.5%)	92 (37.7%)	3.25	0.718
1.	Ease of my interaction with AI processes						
2.	Ease of my usage of AI for professional Development	14 (5.7%)	24 (9.8%)	119 (48.6%)	88 (35.9%)	3.15	0.817
3.	Easy of my information service delivery due to use of AI	11 (4.5%)	30 (12.2%)	116 (47.3%)	88 (35.9%)	3.15	0.801
4.	The Ease of AI usage support for my critical Thinking	12 (4.9%)	24 (9.8%)	118 (48.2%)	91 (37.1%)	3.18	0.798
5.	The Ease of AI usage support for my day-to-day library routine	14 (5.7%)	34 (13.9%)	114 (46.7%)	82 (33.6%)	3.08	0.837
			Grand Mean		**3.20**	**0.789**	
	Perceived Usefulness						
6.	Improved quality of library service delivery due to my AI usage	13 (5.3%)	24 (9.8%)	114 (46.3%)	95 (38.6%)	3.18	0.815
7.	Improved productivity as library personnel due to AI usage	15 (6.1%)	24 (9.8%)	118 (48.2%)	88 (35.9%)	3.14	0.828
8.	My control over information usage due to AI	19 (7.7%)	22 (8.9%)	115 (46.7%)	90 (36.6%)	3.12	0.867
9	Increased effectiveness of performing tasks in university libraries due to my AI usage	12 (4.9%)	28 (11.4%)	114 (46.5%)	91 (37.1%)	3.16	0.812
10.	Usefulness of AI For my professional Development	15 (6.1%)	11 (4.5%)	113 (46.1%)	106 (43.3%)	3.27	0.809
			Grand Mean		**3.21**	**0.808**	

Decision Rule: 1.00-1.74= very low, 1.75– 2.49= low, 2.50 – 3.24 = high, 3.25-4.00= very high
key: VL = Very Low; L = Low; H = High; VH = Very High, $\bar{X}$= Mean SD=Standard Deviation
Source: Researcher's Field Survey, 2025

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Table 4.3 shows the frequency and the corresponding percentages of the participants' responses to statements on perceived ease of use and perceived usefulness of artificial intelligence, which were used to measure the level of motivation-for-acceptance of the technology. As revealed in the Table, the mean response by the participants indicates a high level of motivation across each of the statements. The respondents were most very highly motivated by the ease of interaction with AI processes ($\bar{X}$ = 3.25, SD = 0.717) and the usefulness of AI for their professional development ($\bar{X}$ = 3.27, SD = 0.789). These were followed by the improved quality of library services due to AI usage ($\bar{X}$ = 3.18, SD = 0.793), while the ease of AI usage support for day-to- day library routine scored the least ($\bar{X}$ = 3.08, SD = 0.834).

From the interviews conducted to corroborate the findings on level of motivation-for-use of artificial intelligence by library personnel in South West Nigeria, the report shows that most library personnel have high motivation to use AI because of their usefulness in information services, access and utilisation. One of the interviewed library heads put it this way:

> *"It is a great advancement that we are interested in using for our work in the library... It has helped, especially as it relates to carrying out organisation of resources, cataloguing and classification, getting correct subject headings, and so on. It has even helped in the areas of research." (UL1)*

In another response, it was stated that AI provides some level of "control over information access and use… and they are not difficult to learn how to use them" (UL3). An interviewee noted that she was motivated to use AI because of

> *"Its usefulness in information delivery. AI functions as machine programmes to reason, process information, and answer questions. This makes them helpful for use*

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by librarians, researchers, and students. So there is high interest among the library staff to learn and use AI for the services that we render in the library" (UL8)

Research Question 2: What is the attitude-towards-use of artificial intelligence by library personnel in university libraries in South-west, Nigeria?

Table 4.4: **Analysis of responses on Attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria**

S/N	Statements	SD	D	A	SA	$\bar{X}$	SD
	Cognitive Attitude						
1.	I reason that AI is very important for library personnel	1 (0.4%)	15 (6.1%)	113 (46.3%)	115 (47.1%)	3.40	0.624
2.	There are many beneficial applications of AI to me in librarianship	-	8 (3.3%)	132 (54.8%)	101 (41.9%)	3.39	0.552
3.	My computer skills help me appreciate having a positive attitude to AI	1 (0.4%)	17 (7.0%)	125 (81.2%)	101 (41.4%)	3.34	0.623
4	I am intellectual enough to master any AI needed for information services Delivery	1 (0.4%)	19 (7.8%)	128 (82.7%)	95 (39.1%)	3.30	0.628
5.	I deliver library services better than the traditional way using AI	2 (0.8%)	35 (14.4%)	111 (45.7%)	95 (39.1%)	3.23	0.719
6.	I find AI sinister	36 (14.8%)	45 (18.5%)	123 (50.6%)	39 (16.0%)	2.68	0.916
			Grand Mean			**3.24**	**0.695**
	Affective Attitude						
7.	I am excited about what AI can do in librarianship	4 (1.6%)	23 (9.5%)	100 (41.2%)	116 47.7%)	3.35	0.719
8.	I am interested in using AI for	1 (0.4%)	22 (9.0%)	125 (51.2%)	96 (39.3%)	3.30	0.644
9	I feel confident about the use of AI	3 (1.2%)	36 (14.8%)	117 (48.1%)	87 (35.8%)	3.19	0.723
10.	I feel tense using AI	33 (13.5%)	72 (29.5%)	78 (31.8%)	61 (25.0%)	2.68	0.995

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S/N	Statements	SD	D	A	SA	$\bar{X}$	SD
11.	I resent using AI technologies as library personnel	30 (12.3%)	68 (28.0%)	78 (32.1%)	67 (27.6%)	2.75	0.995
12.	I am concern about AI mining my data as library personnel	13 (5.3%)	55 (22.5%)	96 (39.5%)	79 (32.5%)	2.99	0.877
			Grand Mean		**3.07**	**0.822**	
	Conative Attitude						
13.	I have an impulse that AI can have positive impact on library Personnel	5 (2.1%)	26 (10.7%)	113 (46.5%)	99 (40.7%)	3.26	0.729
14.	I have an intuition that AI can help library personnel perform	1 (0.4%)	21 (8.6%)	122 (50.0%)	100 (41.0%)	3.32	0.644
15.	I have an inclination that AI can replace Librarianship	31 (12.7%)	54 (22.1%)	85 (34.8%)	74 (30.3%)	2.83	1.004
16	I have an instinctive dislike for AI usage in university libraries	41(16.8%)	68 (27.9%)	100 (41.0%)	35 (14.3%)	2.53	0.936
17	I wish using AI would become an important part of Librarianship	5 (2.1%)	29 (12.0%)	118 (48.8%)	90 (37.2%)	3.21	0.729
18	I wish that I could be as calm as others appear to be when using artificial Intelligence	5 (2.1%)	46 (19.1%)	109 (45.2%)	81 (33.6%)	3.10	0.776
					Grand Mean	**3.04**	**0.804**
			Grand Mean for Motivation-to-accept			**3.11**	**0.774**

Decision Rule: 1.00-1.74= very low, 1.75– 2.49= low, 2.50 – 3.24 = high, 3.25-4.00= very high
key: Strongly Agree (SA) = 4, Agree (A) = 3; Disagree (D) = 2; Strongly Disagree (SD) = 1; $\bar{X}$= Mean SD=Standard Deviation
Source: Researcher's Field Survey, 2025

The study also investigated the level of attitude-towards-use of Artificial Intelligence among the library staff in South West Nigeria using a Likert-type scale in the study's instrument. The responses were weighted by allocating 4 points to 'very high,' 3 points to 'high,' 2 points to 'low,' and 1 point to 'very low.' The decision cut-off point was set at 2.5 (1+2+3+4 = 10/4 = 2.5) using the average point. Thus, a mean score of 0.01 – 0.74 was regarded as very low attitude, 1.75– 2.49 was regarded as low attitude, 2.50 – 3.24 was regarded as moderate attitude, and 3.25 – 4.00 was

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regarded as high attitude. The results of the data analysis on the research question are presented in Table 4.4.

As shown in Table 4.5, the respondents indicated a high level of attitude-towards-use of AI with a Grand mean of $\bar{X}$ = 3.08, SD = 0.791. The various aspects that were used to measure the attitude – cognitive, affective, and conative domains – had a mean score within the moderate to high level of attitude, while there was no score indicating low or very low attitude-towards-use of AI by the respondents.

As revealed the Table, respondents indicated a positive attitude-towards-use of AI with a Grand mean of $\bar{X}$ = 3.11, SD = 0.774. The various aspects that were used to measure the attitude – cognitive, affective, and conative domains – had a mean score within the moderate to high level of attitude (positive), while there was no score indicating low or very low (negative) attitude-towards-use of AI by the respondents. The Interview report on the attitude towards the use of AI revealed that many library personnel consider AI to be an enabler, but they would need training to be able to use the technology effectively. According to UL5,

> *"Our Library staff are really excited about AI and the possibilityof incorporating it into what we do. We will however need to provide training, workshops, or professional development opportunities to help them bridge the skills gap."*

In another response, it was stated that

> *"As an academic librarian, I've observed that our library personnel view AI as a powerful enabler for enhancing our services, from streamlining catalog searches to supporting research through data analysis. They recognize its potential to improve efficiency and user experience. So, they have good attitude towards it. However, they also acknowledge the need for comprehensive training to effectively integrate AI tools, ensuring we leverage their capabilities while maintaining our commitment to personalized, expert-driven support."* (UL9)

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A similar response, of UL3 stated

> *"I'm happy to share that our library staff are genuinely excited about AI's potential to transform our work. They see it as an empowering tool to enhance patron services, from automating routine tasks to offering advanced research support. Their positive attitude drives a strong commitment to learning and adapting, though they recognize the importance of training to fully harness AI's capabilities while preserving our core mission of fostering knowledge and connection."* (UL3)

Research Question 3: What is the level of digital literacy skill of library personnel in universities in South-West, Nigeria?

Table 4.5: **Analysis of responses on level of digital literacy skill of library personnel in universities in South-West, Nigeria**

S/N	Statements	VL	L	H	VH	$\bar{X}$	SD
	Novice/Beginner Stage						
1.	My Awareness of Artificial Intelligence (AI) platforms for library information service Delivery	2 (0.8%)	22 (9.3%)	113 (47.9%)	99 (41.9%)	3.31	0.673
2.	My Ability to identify AI platforms that can impact library information service delivery	2 (0.8%)	28 (11.9%)	117 (49.6%)	89 (37.7%)	3.24	0.688
3.	My Awareness of AI platforms that cam impact my professional Development	3 (1.3%)	28 (11.9%)	114 (48.3%)	91 (38.6%)	3.24	0.706
4	My knowledge of using AI platforms	7 (3.0%)	28 (11.9%)	106 (44.9%)	95 (40.3%)	3.30	0.769
				Grand Mean		**3.26**	**0.71**

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S/N	Statements	VL	L	H	VH	$\bar{X}$	SD
	Advanced Beginner Stage						
5.	My Ability to use AI technologies for basic library services and my professional development	6 (2.5%)	25 (10.5%)	116 (48.9%)	90 (38.0%)	3.22	0.734
6.	My Ability to assess the credibility of information on AI Platforms	4 (1.7%)	32 (13.4%)	109 (45.8%)	93 (39.1%)	3.22	0.738
7.	My Usage of formatting tools of AI technologies	3 (1.3%)	44 (18.5%)	109 (45.8%)	82 (34.5%)	3.13	0.751
8.	My Knowledge of AI copyright Laws	8 (3.4%)	46 (19.3%)	100 (42.0%)	84 (35.3%)	3.09	0.822
				Grand Mean		**3.17**	**0.758**
	Competent Stage						
9	My Usage of AI platforms for cataloguing of information resources	8 (3.3%)	38 (15.9%)	102 (42.7%)	91 (38.1%)	3.15	0.808
10.	My Competence in building digital information collections using AI platforms	11 (4.6%)	52 (21.8%)	94 (39.3%)	82 (34.3%)	3.03	0.864
11.	My Ability to install AI security software on digital devices	9 (3.85)	56 (23.4%)	93 (38.9%)	81 (33.9%)	3.03	0.852
12	My Knowledge of AI for Indexing electronic resources	11 (4.6%)	52 (21.8%)	96 (40.2%)	80 (33.5%)	3.03	0.860
				Grand Mean		**3.08**	**0.842**
	Proficient Stage						
13.	My Ability to identify AI generative output	10 (4.2%)	68 (28.5%)	110 (46.0%)	51 (21.3%)	2.85	0.802
14.	My Ability to apply metadata development skill to emerging technologies like AI	11 (4.6%)	48 (20.1%)	130 (54.4%)	50 (20.9%)	2.92	0.768
15.	My Ability to design AI models	24 (10.0%)	63 (26.4%)	101 (42.3%)	51 (21.3%)	2.75	0.905
16.	My Competence in library website development	20 (8.4%)	58 (24.3%)	107 (44.8%)	54 (22.6%)	2.82	0.879
				Grand Mean		**2.85**	**0.821**
	Expert Stage						
17.	My Expertise in collaborating through emerging technologies like AI	7 (2.9%)	53 (22.3%)	100 (42.0%)	78 (32.8%)	3.05	0.818

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S/N	Statements	VL	L	H	VH	$\bar{X}$	SD
18.	My Ability to solve technological problems by exploring the settings of AI programs	4 (1.7%)	60 (25.2%)	92 (38.7%)	82 (34.5%)	3.06	0.814
19.	My Expertise in producing complex, multimedia content in different formats, using variety of digital tools the AI environment	9 (3.8%)	59 (24.8%)	98 (41.2%)	72 (30.3%)	2.98	0.839
20.	My Expertise of navigating AI domains without any hitch	11 (4.6%)	58 (24.4%)	91 (38.2%)	78 (32.8%)	2.99	0.871
				Grand Mean		**3.04**	**0.826**
				Grand Mean for Attitude-Towards-Use		**3.08**	**0.791**

Decision Rule: 1.00-1.74= very low, 1.75– 2.49= low, 2.50 – 3.24 = high, 3.25-4.00= very high
key: VL = Very Low; L = Low; H = High; VH = Very High; $\bar{X}$= Mean; SD=Standard Deviation
Source: **Researcher's Field Survey, 2025**

To confirm the level of digital literacy skills, the study's instruments asked questions related to novice/beginner, advanced beginner, competent, proficient, and expert stages of digital literacy skills. The responses were weighted by allocating 4 points to 'very high,' 3 points to 'high,' 2 points to 'low,' and 1 point to 'very low.' The decision cut-off point was set at 2.5 (1+2+3+4 = 10/4 = 2.5) using the average point. Thus, a mean score of 0.01 – 0.74 was regarded as very low digital literacy skill, 1.75 – 2.49 was regarded as low digital literacy skill, 2.50 – 3.24 was regarded as moderate digital literacy skill, and 3.25 – 4.00 was regarded as high digital literacy skill. The results of the data analysis on the research question are presented in Table 4.5.The result revealed that the highest digital literacy skill scores were from the Novice/beginner level with the awareness of Artificial Intelligence platform for library information service delivery scoring highest ($\bar{X}$ = 3.32, SD = 0.679), followed by the ability to identify AI platforms that can impact library information service delivery ($\bar{X}$ = 3.25, SD = 0.686) and awareness of AI platforms that can impact

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professional development ($\bar{X}$ = 3.25, SD = 0.706). The lowest score was from the proficient digital skill level with the ability to design AI models ($\bar{X}$ = 2.78, SD = 0.865).

Report from the interviews corroborated these findings on the digital literacy skills of the library personnel. Nearby all the interviewees regarded their library staff to either be in the advanced beginner or competent stages of digital literacy skills.

In a response by UL7, it was stated that

> *"I'd assess our library personnel's digital literacy skills as ranging between the advanced beginner and competent stages. They proficiently navigate digital catalogs, utilize research databases, and assist patrons with technology, demonstrating a solid foundation. Many are adept at leveraging tools like citation software and digital archives, though some complex tasks, such as advanced data visualization or emerging AI applications, still require guided support or further training to achieve full mastery. Their enthusiasm for growth ensures steady progress in these areas."* (UL7)

Other respondents align with the same view but noted that limited access to training is debarring librarians for developing more digital skills. According to UL6,

> *"Limited access to consistent, high- quality training hinders their ability to fully develop these skills, particularly in advanced areas like AI-driven tools or sophisticated data analysis. This gap in training opportunities restricts their potential to progress beyond competence, despite their eagerness to grow and adapt to new technologies."*

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Research Question 4: What are the facilitating conditions available to library personnel in universities in South-West, Nigeria?

Table 4.6: Analysis of responses on Facilitating conditions for the use of AI by library personnel in universities in South-West, Nigeria

S/N	Statements	SD	D	A	SA	$\bar{X}$	SD
	Organisational Support	4	24	119	90	3.24	0.701
1.	The university management supports my use of AI for library services and staff professional development	(1.7%)	(10.1%)	(50.2%)	(38.0%)		
2.	The policy of my university library supports the use of AI technologies that are Beneficial	1 (0.4%)	29 (12.2%)	123 (51.7%)	85 (35.7%)	3.23	0.668
3.	There is dedicated AI technologies for library service delivery and professional development in my university	7 (2.9%)	43 (18.1%)	105 (44.1%)	83 34.9%)	3.11	0.799
4.	Those that are versatile in AI technologies usage are made heads of unit in my university library	8 (3.4%)	70 (29.7%)	93 (39.4%)	65 (27.5%)	2.91	0.838
5.	The policy of my university library provides support for training on AI technologies	1 (0.4%)	39 (16.3%)	124 (51.7%)	76 (31.7%)	3.15	0.690
6.	My university library policy is firm on AI copyright Issues	7 (2.8%)	54 (22.7%)	99 (41.6%)	78 (32.8%)	3.04	0.821
				Grand Mean		**3.12**	**0.753**
	Organisational Resources						
7.	My university management provides facilities to encourage the use of AI technologies for library	3 (1.3%)	43 (18.0%)	123 (51.5%)	70 (29.3%)	3.09	0.719
8.	My university library is equipped with high-speed Internet connectivity necessary to use AI	3 (1.3%)	39 (16.3%)	113 (47.3%)	84 (35.1%)	3.16	0.735
9	My university library has access to uninterrupted power supply which makes usage of technologies	9 (3.8%)	51 (21.4%)	91 (38.2%)	87 (36.6%)	3.08	0.853

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	Seamless						
10.	My university library enlists the help of experts to maintain AI systems	3 (1.3%)	61 (26.0%)	90 (38.3%)	81 (34.5%)	3.06	0.809
11.	My university library provides devices through which traditional sources would be converted to digital using AI techniques.	6 (2.6%)	52 (22.1%)	104 (44.3%)	73 (31.1%)	3.04	0.797
12.	Provided office spaces are conducive enough to support my use of AI	4 (1.7%)	43 (18.3%)	108 (46.0%)	80 (34.0%)	3.12	0.761
				Grand Mean		**3.09**	**0.785**

Decision Rule: 1.00-1.74= very low, 1.75– 2.49= low, 2.50 – 3.24 = high, 3.25-4.00= very high
key: Strongly Agree (SA) = 4, Agree (A) = 3; Disagree (D) = 2; Strongly Disagree (SD) = 1; $\bar{X}$= Mean; SD=Standard Deviation
Source: Researcher's Field Survey, 2025

To confirm the facilitating conditions available to library personnel for the use of AI, respondents indicated agreement with facilitating conditions-related statements on organisational support and organisational resources. Table 4.6 shows the frequency, percentage, mean, and standard deviation obtained from the responses to each statement.

As shown in Table 4.6, both organisational support and organisational resources were reported to be highly available by the respondent, with the Grand mean of $\bar{X}$ = 3.12, SD = 0.714 and $\bar{X}$ = 3.09, SD = 0.785, respectively. The study revealed that the highest organisational support reported to be available is the university management support for the use of AI for library services and staff development ($\bar{X}$ = 3.24, SD = 0.701) and the policy support for the use of AI by the university library ($\bar{X}$ = 3.23, SD = 0.679). In the organisational resources' items, the highest resources reported available by the respondents is that the library is equipped with high-speed internet connectivity necessary to use AI ($\bar{X}$ = 3.16, SD = 0.742) and that the university management provides office spaces conducive enough to support my use of AI ($\bar{X}$ = 3.12, SD = 0.714).

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On the aspect of facilitating conditions, responses from the interviewees show that the provision of tools such as computers and internet facilities is the major source of support for library personnel to develop digital skills and use AI. UL4 stressed that

> *"In-house training should be prioritised in addition to mentoring of library personnel for us to achieve better results."*

Nevertheless, all the interviewees either report the lack policy on AI use or having in the draft stage at their institutions.

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4.2.2: Test of Hypotheses

Hypothesis 1: There is no significant influence of digital literacy skill on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-West, Nigeria

Table 4.7: Regression analysis for Influence of digital literacy skill on motivation- for-acceptance of AI by library personnel in universities in South-West, Nigeria

a. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759[a]	.577	.575	.41854

a. Predictors: (Constant), Digital literacy skills

b. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	56.522	1	56.522	322.662	.000[b]
	Residual	41.516	237	.175		
	Total	98.039	238			

a. Dependent Variable: motivation-for-acceptance of AI
b. Predictors: (Constant), Digital literacy skills

c. Coefficients

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	.643	.143		4.492	.000
	Digitallitskill	.822	.046	.759	17.963	.000

a. Dependent Variable: motivation-for-acceptance

Source: Researcher's Field Survey, 2025

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Tables 4.7a, b, and c present the result of the hypothesis to test the influence of digital literacy skill on motivation-for-acceptance of Artificial Intelligence among library personnel in South West Nigeria. The hypothesis was tested using simple linear regression. Data measuring digital literacy skill were regressed on data measuring motivation-for-acceptance of AI.

Table 4.7a reveals that digital literacy skill has a positive correlation (R = 0.759) with motivation-for-acceptance of AI among library personnel in South West Nigeria. The coefficient of determination (Adj. $R^2 = 0.575$) shows that digital literacy skills explain 57.50% of the variance in the motivation-for-acceptance of AI among the library personnel. This means that other factors not included in the regression account for the remaining 42.5% variation in the motivation-for-acceptance of AI among library personnel in South West Nigeria. In addition, Table 4.7b shows the overall significance of the model for hypothesis one ($F(1, 237) = 322.662$, $p < 0.05$). Table 4.7c also shows that if all other factors remain constant, a unit change in digital literacy skills would result in a 0.822 increase in the motivation-for-acceptance of AI among library personnel in South West Nigeria at a 95% level of confidence ($\beta = 0.822$, $p < 0.05$). Based on the result, the null hypothesis is therefore rejected.

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Hypothesis 2: There is no significant influence of digital literacy skill on attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria

Table 4.8: Regression analysis for influence of digital literacy skill on attitude-towards-use of artificial intelligence by library personnel in universities in South- West, Nigeria

a. Model Summar

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.667[a]	.445	.443	.33675

a. Predictors: (Constant), Digital literacy skills

b. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	21.478	1	21.478	189.392	.000[b]
	Residual	26.763	236	.113		
	Total	48.241	237			

a. Dependent Variable: Attitude-towards-use of AI
b. Predictors: (Constant), Digital literacy skills

c. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.545	.115		13.397	.000
	Digitallitskill	.508	.037	.667	13.762	.000

a. Dependent Variable: Attitude-towards-use of AI
Source: Researcher's Field Survey, 2025

The second hypothesis was also tested using the simple linear regression analysis. Tables 4.8a, b, and c, provides the result of the hypothesis, which tested the influence of digital literacy skill on attitude-towards-use of Artificial Intelligence among library personnel in South West Nigeria.

As shown in Table 4.8a, digital literacy skill has a moderate positive correlation (R = 0.667) with attitude-towards-use of Artificial Intelligence among library personnel in South West Nigeria. The coefficient of determination (Adj. R^2 = 0.443) shows that digital literacy skills explain 44.3% of the variance in the attitude-towards-use of AI among the library personnel. This means that other factors not included in the regression account for the remaining 55.7% variation in the attitude-towards-use of AI among library personnel in South West Nigeria. Furthermore, Table 4.8b shows the overall significance of the model for hypothesis two ($F(1, 236) = 189.392$, $p < 0.05$). In

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addition, Table 4.8c also reveals that if all other factors remain constant, a unit change in digital literacy skills would result in a 0.508 increase in the attitude-towards-use of AI among library personnel in South West Nigeria at a 95% level of confidence ($\beta = 0.508$, $p < 0.05$). Following the results of the regression analysis, the null hypothesis was therefore rejected.

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Hypothesis 3: There is no significant influence of facilitating condition on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-West, Nigeria

Table 4.9: Regression analysis for Influence of facilitating conditions on motivation-for-acceptance of artificial intelligence

a. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.615[a]	.378	.376	.50076

a. Predictors: (Constant), Facilitating Conditions

b. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	36.614	1	36.614	146.010	.000[b]
	Residual	60.184	240	.251		
	Total	96.798	241			

a. Dependent Variable: motivation-for-acceptance of AI
b. b. Predictors: (Constant), Facilitating Conditions

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c. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.013	.181		5.590	.000
	Facilitating Conditions	.696	.058	.615	12.083	.000

a. Dependent Variable: motivation-for-acceptance of AI

Source: Researcher's Field Survey, 2025

The hypothesis 3 of the study tested the influence of facilitating condition on motivation-for-acceptance of artificial intelligence among library personnel in South West Nigeria. The results of the analysis done with simple linear regression is presented in Table 4.9a, b, and c. As shown in Table 10a, facilitating conditions elicit a moderate positive correlation (R = 0.615) on motivation-for-acceptance of artificial intelligence among library personnel in South West Nigeria. The coefficient of determination (Adj. R^2 = 0.443) confirms that facilitating conditions accounted for 37.6% of the variance in the motivation-for-acceptance of artificial intelligence among the library personnel, indicating that other factors not included in the analysis account for the remaining 62.4% variation in the motivation-for-acceptance of AI among library personnel in South West Nigeria. Also, Table 10b shows the overall significance of the model for hypothesis three ($F(1, 240) = 146{,}010$, $p < 0.05$), while Table 10c reveals that if all other factors remain constant, a unit change in facilitating conditions would result in a 0.696 increase in the motivation-for-acceptance of AI among library personnel in South West Nigeria at a 95% level of confidence ($\beta = 0.696$, $p < 0.05$). Based on the results, the null hypothesis was rejected.

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Hypothesis 4: There is no significant influence of facilitating condition on attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria

Table 4.10: Regression analysis for Influence of facilitating condition on attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria

a. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.662[a]	.438	.435	.33898

a. Predictors: (Constant), Facilitating Conditions

b. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	21.382	1	21.382	186.080	.000[b]
	Residual	27.463	239	.115		
	Total	48.845	240			

a. Dependent Variable: Attitude-towards-use of AI
b. b. Predictors: (Constant), Facilitating Conditions

c. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.451	.123		11.788	.000
	Facilitating Conditions	.534	.039	.662	13.641	.000

a. Dependent Variable: Attitude

Source: Researcher's Field Survey 2025

To test the fourth hypothesis, the simple linear regression analysis was deployed in this study. The result of the analysis on hypothesis 4, which stipulated that there is no significant influence of

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facilitating condition on attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria, is presented in Tables 4.10a, b, and c. Table 10a shows that facilitating conditions has a moderate positive correlation (R = 0.662) on attitude-towards-use of artificial intelligence among library personnel in universities in South West Nigeria. The coefficient of determination (Adj. R^2 = 0.435) indicates that facilitating conditions accounted for 43.5% of the variance in the attitude-towards-use of artificial intelligence among the library personnel, indicating that other factors not included in the analysis account for the remaining 56.5% variation in the attitude-towards-use of AI among library personnel in universities in South West Nigeria. Additionally, Table 10b shows the overall significance of the model for hypothesis four (F (1, 239) = 186,080, $p < 0.05$), while Table 10c reveals that if all other factors remain constant, a unit change in facilitating conditions would result in a 0.534 increase in the attitude-towards-use of AI among library personnel in South West Nigeria at a 95% level of confidence ($\beta = 0.696$, $p < 0.05$). Based on the results, the null hypothesis was rejected.

Hypothesis 5: There is no significant joint influence between digital literacy skill and facilitating conditions on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-West, Nigeria

Table 4.11: Model summary of the joint influence between digital literacy skill and facilitating conditions on motivation-for-acceptance of artificial intelligence among library personnel in South West Nigeria

a. Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	0.748[a]	0.559	0.556	0.41472

a = Predictors: (Constant), Facilitating Conditions, Digital Literacy Skills

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b: ANOVA Result for multiple regression analysis

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig (p)
1	Regression	59.355	2	26.667	172.550	0.000[b]
	Residual	46.782	272	0.172		
	Total	106.137	274			

a = Dependent variable: motivation-for-acceptance of AI.

b = Predictors: (Constant), Facilitating Conditions, Digital Literacy Skills

c): **Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.559	.149		3.743	.000
	Digital Literacy Skill	.671	.061	.619	10.955	.000
	Facilitating Conditions	.187	.062	.170	3.012	.003

a. Dependent Variable: motivation-for-acceptance

Source: Researcher's Field Survey 2025

To examine the combined influence between digital literacy skill and facilitating conditions on motivation-for-acceptance of artificial intelligence, the hypothesis was tested using a multiple regression model analysis. Motivation-for-acceptance of use of AI was entered into the model as

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the dependent variable, while the independent variables comprised facilitating conditions and digital literacy.

Tables 4.11a, 11b, and 11c show the results of the multiple regression model analysis to determine the combined influence of facilitating conditions (X1) and digital literacy (X2) on motivation-for-use of artificial intelligence (Y) among library personnel in South West Nigeria. In Table 11a, R determines the correlation between X1, X2, and Y in the regression model. The result shows a positive correlation between the independent and dependent variables. The correlation coefficient $R = 0.748$ shows a high positive, significant relationship at $p < 0.05$. The Coefficient of Determination, R^2, predicts the relationship between the independent and dependent variables. The result from Table 4.11a shows that R^2 is 0.559. This means that the independent variables (facilitating conditions and digital literacy skills) jointly account for 55.9% of the total variance in the dependent variable (motivation-for-use of AI). This finding shows that the constructs of the independent variables have a significant joint influence on motivation-for-use of AI among library personnel in South West Nigeria.

Table 4.11b shows the ANOVA result for the multiple regression analysis. The result of the F-Ratio confirms that the analysed regression model is significant at $p < 0.05$. This confirms that the regression model significantly predicted the influence of the independent variables on the dependent variable. Consequently, it shows that facilitating conditions and digital literacy skills elicit significant combined influence on motivation-for-use of AI. Hence, the null hypothesis was rejected.

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Hypothesis 6: There is no significant joint influence between digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria

Table 4.12: Model summary of the joint influence between digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence

a. Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	0.721[a]	0.520	0.517	0.31351

a = Predictors: (Constant), Facilitating Conditions, Digital Literacy Skills

b: ANOVA model for multiple regression

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig (p)
1	Regression	28.888	2	14.444	146.957	.000[b]
	Residual	26.635	271	.098		
	Total	55.523	273			

a = Dependent variable: Attitude-towards-use.
b = Predictors: (Constant), Facilitating Conditions, Digital Literacy Skills

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c: **Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.207	.113		10.653	.000
	Digitallitskill	.312	.046	.397	6.741	.000
	FacilitatingConditions	.308	.047	.386	6.551	.000

a. Dependent Variable: Attitude-towards-use of AI

Source: Researcher's Field Survey 2025

Similarly, to examine the combined influence of digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence, hypothesis 6 was tested using a multiple regression model analysis. Attitude-towards-use of AI was entered into the model as the dependent variable, while the independent variables comprised facilitating conditions and digital literacy.

Tables 4.12a and 4.12b show the results of the multiple regression model analysis to determine the combined influence of facilitating conditions (X1) and digital literacy (X2) on attitude-towards-use of artificial intelligence (Y) among library personnel in South West Nigeria.

In Table 4.12a, determines the correlation between X1, X2, and Y in the regression model. The result shows a positive correlation between the independent and dependent variables. The correlation coefficient R = 0.721 shows a high positive, significant relationship at $p < 0.05$. The Coefficient of Determination, R^2, predicts the relationship between the independent and dependent variables. The result from Table 4.12a shows that R^2 is 0.520. This means that the independent variables (facilitating conditions and digital literacy skills) jointly account for 52.0% of the total

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variance in the dependent variable (Attitude-towards-use of AI). This finding shows that the constructs of the independent variables have a significant joint influence on attitude-towards-use of AI among library personnel in South West Nigeria.

Table 4.12b shows the ANOVA result for the multiple regression analysis. The result of the F-Ratio confirms that the analysed regression model is significant at $p < 0.05$. This confirms that the regression model significantly predicted the influence of the independent variables on the dependent variable. Consequently, it shows that facilitating conditions and digital literacy skills elicit significant combined influence on attitude-towards-use of AI. Hence, the null hypothesis was rejected.

4.3: Discussion of Findings

The analysis of data in this chapter is in tandem with the generated research questions and hypotheses to guide this study, which have led to new findings. The discussion of these findings is grounded on the quantitative and qualitative (interview sessions with library heads) aspects of the research work.

The first research question focused on the level of motivation-for-acceptance of artificial intelligence by library personnel in universities in South-West, Nigeria. The quantitative and qualitative result showed that library personnel in university libraries in South-west, Nigeria were highly motivated by the perceived ease of interaction with AI processes for their professional development and perceived usefulness of AI in information services, access and utilisation

The Perceived Ease of Use (PEU) and Perceived Usefulness (PU) of AI application to library information services delivery and individual professional growth by library personnel in South-

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west universities in Nigeria are on the high side. Although library personnel perceived usefulness of AI is slightly higher than its perceived ease of use, both positively influence their motivation-for-acceptance of AI for library day-to-day information services delivery and professional development. These findings by this study are in tandem with that of previous study on motivation which emphasised motivation-to-use new technological innovation as crucial factor to consider when examining the use and implementation of new technological systems especially within the library space[1,2]. Although in contract to a study that reports low motivation/intention to use AI due to perceived self-threat, scepticism and distrust, the findings of this study further established that motivation-for- acceptance of AI is based on its rationale, necessity and functional value[3,4]. This is in tandem with Unified Theory of Acceptance and Use of Technology (UTAUT) Model assertion that for people to use technologies such as AI, they must have a motivating reason which could be as a result of the fun or pleasure they will derive from using the technology[5,6]. This, as revealed by the findings, play a crucial role in the acceptance and use of AI.

The second research question was raised to assess the attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria. The quantitative and qualitative result showed that library personnel in university libraries in South-west, Nigeria have a positive attitude towards the use of AI. This finding differs to that of a study that reports a negative attitude toward artificial intelligence by respondents who ranked high in conscientiousness[7]. This disparity in findings stems from different study population, year and academic qualification of the study respondents. However, according to the findings of this study, it is apparent that Nigerian library personnel have a positive disposition in attitude-towards-use of AI both for library information services delivery and personnel professional development. The findings corroborate the assertion that attitudes are evaluations that involve a preference for or against the attitude object, commonly

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expressed in terms such as like, dislike, prefer, hate, and love[8]. Interview with library heads on library personnel attitude-towards-use of AI confirmed the positive attitude of library personnel towards the use of AI for information service delivery. From the study findings, it can be inferred that library personnel in university libraries do not dislike or hate AI application to library services delivery but rather like and prefer AI, even for individual professional development; which could have come through direct and indirect experiences with AI, which is the attitude objects[9,10]. This is corroborated by university library heads responses. The findings also reveals that attitude plays significant role in library personnel decision-making process and further confirms that library a person's cognition, affect and conation act are significant components in determining their attitude. These findings are also reported in other studies[11,12]. As reveal by the study findings, library personnel have free decision-making power over their action and thus tend to have positive attitudes because this gives a sense of control over their thoughts and behaviours in relation to AI[13].

The third research question which investigated the level of digital literacy skill of library personnel in university libraries in South-West, Nigeria, revealed that library personnel are either in the advanced beginner or competent stages of digital. This is in contrast to the findings of a study that revealed a very low digital literacy skill possession by librarians. This contrasting findings might be as a result of difference in metrics of research instrument, geo-political location and year of the study[14]. However, this study findings highlight the need for university libraries personnel to seek to be more digitally skilled and versatile in technology usage especially in this digital age and wake of Fifth Industrial Revolution era[15,16]. Being at the advanced beginner or competent stages of digital literacy skills level shows that majority of the library personnel in south-west university libraries, Nigeria possess the ability to search for information on the internet and navigate through the Web and databases[17] but are not expert in producing complex, multimedia content in different formats, using a variety of digital tools within the AI environment. Thus, not able to fathom the numerous

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issues involved in the design, implementation and in-depth usage of AI technologies which should be a matter of concern to library stakeholders and consideration in the education of librarians and the curriculum in library schools[18,19,20] to ensure library personnel function to their optimal level[21,22,23].

The fourth research question that guided this study seeks to know the facilitating conditions available to library personnel for the use of AI in universities libraries in South-West, Nigeria. This question seeks to ascertain the degree to which organisational and technical infrastructures required to use AI are available in federal, state and private university libraries in South-west, Nigeria. The findings revealed that both organisational support and organisational resources are highly available to library personnel in university libraries in South-west, Nigeria. According to the findings, university management support is the highest available organisational support for the use of AI for library services and professional advancement by library personnel in university libraries in South-west, Nigeria.

The findings further revealed the provision of computers and high-speed internet connectivity as the highest organisational resources provided for the use of AI in university libraries in South-west, Nigeria while policy on use of AI for was revealed as the lowest support. These findings negate are in tandem with previous studies that revealed that university management provides facilities to encourage the use of AI technologies for library service delivery and professional development[24,25,26,27,28]. Similarly, interview responses from university heads confirms the availability of organisational support and resources; and confirms its influence on the usage of AI for information service delivery as established in literatures[29]. These findings negate that of a study that revealed insignificant influence of the technical resource facilitating conditions availability on intention to use emerging technology that is AI related[30]. The variance in findings might be due to

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different geographical and conceptual scope, year, population and sample.

Hypothesis one measures the significant influence of digital literacy skill on motivation-for-acceptance of artificial intelligence by library personnel in university libraries in South-West, Nigeria. It was found that digital literacy skills have a significant influence on the motivation-for-acceptance of artificial intelligence by library personnel in university libraries in South-West, Nigeria. The correlation analysis shows that a positive influence exists between motivation-for-acceptance of AI and Digital literacy skills. Thus, null hypothesis one was rejected, and it was upheld that digital literacy skill significantly influences motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria.

Null hypothesis two was formulated to determine the significant influence of library personnel's digital literacy skill on attitude-towards-use of artificial intelligence. It was found that the digital literacy skill of library personnel has a positive influence on attitude-towards-use of artificial intelligence of library personnel in university libraries in South-west, Nigeria. Such influence positions that the digital literacy skill of library personnel in the university libraries in South-west, Nigeria significantly influences attitude-towards-use of artificial intelligence among library personnel in universities libraries.

On the aggregate, the result of the null hypothesis two revealed a moderate positive influence exists between the two constructs. The existing influence of library personnel's digital literacy skills on attitude-towards-use of artificial intelligence for library services delivery and professional advancement was determined to be significant. Hence, the null hypothesis, which states that "There is no significant influence of digital literacy skill on attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria", was rejected.

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Hypothesis three was formulated to determine the significant influence of facilitating conditions available for the use of AI by library personnel in university libraries on their motivation-for-acceptance of AI. The testing of the hypothesis using correlational analysis reveals existence of a positive influence between these two variables among library personnel in South West Nigeria. This differs from the findings of a study that revealed insignificant influence of facilitating conditions although the study differ in geographical and conceptual scope, year, population and sample[30]. The findings of this study influence positions that facilitating conditions available to library personnel in the university libraries in South-west, Nigeria significantly influences motivation-for-acceptance of artificial intelligence among library personnel in universities libraries. As revealed by the result, the correlation analysis confirmed existence of a positive influence between the two variables (facilitating conditions and motivation-for-acceptance of AI) among library personnel in South West Nigeria. The influence was determined to be significant. The null hypothesis was therefore rejected.

Hypothesis four measures the significant influence of facilitating conditions on attitude-towards-use of artificial intelligence by library personnel in university libraries in South-West, Nigeria. It was found that facilitating condition has a significant influence on attitude-towards-use of AI by library personnel in university libraries in South-West, Nigeria. This finding contradicts that of a study on facilitating conditions which might be due to differences in study population and geographical location[30]. The correlation analysis of this study shows that a positive influence exists between facilitating condition on attitude-towards-use of artificial intelligence, and the influence is significant. Thus, the null hypothesis four was, which states that "There is no significant influence of facilitating condition on attitude-towards-use of artificial intelligence by library personnel in universities in South-West, Nigeria" was rejected, and it was upheld that facilitating

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condition significantly influences attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria.

For the combined influence of digital literacy skills and facilitating conditions on the motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria, the null hypothesis five states that "There is no significant joint influence between digital literacy skill and facilitating conditions on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria." The analysis results found that digital literacy skills and facilitating conditions shows a high and positive significant influence on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria. This influence shows that digital literacy skills and facilitating conditions significantly combined to influence motivation-for-acceptance of artificial intelligence by library personnel. For the combined influence on the motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria, if all other factors remain constant, a unit change in digital literacy skills and facilitating conditions will lead to an increase in motivation-for-acceptance of AI by library personnel in university libraries in Soth-west, Nigeria. This implies that the correlation coefficient shows a high positive significant relationship. The null hypothesis five was thus rejected and the alternative hypothesis that there is a significant joint influence of digital literacy skills and facilitating conditions on motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria upheld.

The sixth and last hypothesis that govern this study was formulated to measure the joint significant influence joint influence between digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence. It states that "There is no significant joint influence between digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence by

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library personnel in universities in South-West, Nigeria." The testing of the hypothesis using correlational analysis reveals existence of a positive influence of digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence. The analysis results found that digital literacy skills and facilitating conditions shows a high and positive significant influence on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria.

This influence shows that digital literacy skills and facilitating conditions significantly combined to influence on attitude-towards-use of artificial intelligence by library personnel. For the combined influence on the on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria, if all other factors remain constant, a unit change in digital literacy skills and facilitating conditions will lead to an increase in attitude-towards-use of AI by library personnel in university libraries in Soth-west, Nigeria. This implies that the correlation coefficient shows a high positive, significant relationship. Consequently, the null hypothesis six was rejected and the alternative hypothesis that there is a significant joint influence of digital literacy skill and facilitating conditions on attitude-towards-use of artificial intelligence by library personnel in universities in South-west, Nigeria upheld.

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Chapter Five

Conclusion

This chapter presents the summary of the overall findings of the study. It presents conclusion based on the results of data analysed, outlines recommendations based on findings of the study and research experience and also suggest areas for further studies

5.1 Summary of Findings

This study examined digital literacy skills and facilitating conditions as correlates of motivation-for-acceptance and attitude-towards-use of artificial intelligence by library personnel in university libraries in South-west, Nigeria. The study has two independent variables and two dependent variables. The research was guided by ten objective which translated to four research questions and six hypothesis that helped evaluate independent variables' specific and combined influence on motivation-for-acceptance and attitude-towards-use of artificial intelligence by library personnel in university libraries in South-west, Nigeria.

From the data analysis and findings, several main empirical conclusions were drawn. The motivation-for-acceptance of artificial intelligence by library personnel in university libraries in South-west, Nigeria both for information service delivery and personal professional growth is high. Library personnel in university libraries in South-west, Nigeria have positive attitude towards the use of artificial intelligence for information service delivery and also personal professional development. Also, library personnel in university libraries in South-west, Nigeria have a mastery of digital literacy skill needed for the usage of artificial intelligence for information services and professional advancement. However, there is need for library personnel to be further and better trained to be better skilled in digital literacy. This is because majority of the library personnel are either at the advanced beginner or competent stages of

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digital literacy skills.

There is provision of tools such as computers and fast internet connectivity as facilitating conditions for the usage of artificial intelligence for information services and professional advancement. However, there is need for improvement especially on the provision of policy on the acceptance and usage of artificial intelligence for information service delivery and professional development of library personnel in university libraries in South-west, Nigeria. There is also a statistically significant combined positive influence of digital literacy skills and facilitating conditions on motivation-for-acceptance and attitude-towards-use of artificial intelligence by library personnel in university libraries in South-west, Nigeria.

Personnel in university libraries in South-west, Nigeria view motivation-for-acceptance of artificial intelligence by library personnel in universities in South-west, Nigeria is an active ingredient in the usage of AI technologies and applications for the day-to-day library information services delivery. These personnel perceived AI to be useful for library services delivery. The also consider AI ease to use for information services delivery to library users and personal professional advancement. Although many library personnel perceive AI to be easy to use findings revealed that not all library personnel have fully grasped the usage of AI for information services delivery.

On the attitude-towards-use of artificial intelligence, the cognitive component (Mental, Belief/ Evaluation); affective component (Neural, Feeling/Emotion); and conative component (Readiness, Response/ Action) of library personnel in universities in South-west, Nigeria, is considered positive. That is library personnel display favourable attitude towards the usage of AI for information service delivery and professional advancement. None of the personnel have an inclination that AI can replace librarianship or an instinctive dislike for AI usage in university libraries but rather wish AI would become an important part of librarianship.

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Findings on the digital literacy skill level or stages, which are the novice/beginner stage, advance beginner stage, competent stage, proficient state and the expert stage, revealed that the level of digital literacy skill of library personnel in universities in South-west, Nigeria falls with the advanced beginner or competent stages of digital literacy skills. This implies that many personnel in university libraries in South-west, Nigeria lack the ability to solve technological problems by exploring the settings of AI programs and also do not possess expertise in producing complex, multimedia content in different formats, using a variety of digital tools within the AI environment. There is therefore need for these library personnel to scaleup on the level of their digital literacy skills

On the facilitating conditions available to library personnel in universities in South-west, Nigeria, university management support was reported to be available to library personnel for the use of AI for information services delivery and professional development. This is reflected in the availability of dedicated AI technologies for library service delivery and professional development. The availability of AI technologies for library service delivery and professional development and libraries being equipped with high-speed internet connectivity necessary for the to use AI were reported as available organisational resources that facilitates the use of AI.

Motivation-for-acceptance of AI for information service delivery by library personnel was found to be influenced by personnel's digital literacy skill levels reflected in their perception of AI as useful and not difficult to use for information services delivery and professional development. Similarly, available organisational support and organisational resources facilitating conditions was found to also influence the motivation-for-acceptance of AI for information service delivery by library personnel in university libraries in South-west, Nigeria both for information services delivery to library users and professional development.

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The attitude-towards-use of AI by library personnel in universities libraries for information services delivery was found to be influenced by their digital literacy skills level. The digital literacy skill level of library personnel facilitated their positive attitude to the use of AI for information services delivery and professional development. Facilitating conditions was likewise found to influence library personnel's attitude-towards-use of AI. The availability of these facilitating conditions influence is reflected in their positive attitude towards use of AI for information services delivery in university libraries and professional development.

On the combined influence of the independent variable on dependent variables, the study findings revealed a combined influence of digital literacy skills and facilitating conditions on motivation- for-acceptance of AI by library personnel in university libraries in South-west, Nigeria. Similarly, digital literacy skills of library personnel in university libraries and available facilitating conditions for the use of AI for library services were found to jointly influence the attitude of library personnel. The null hypothesis on these were therefore rejected.

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5.2 Conclusion

The study examined the motivation and attitude of library personnel in South-west university libraries, Nigeria in relation to their willingness to adopt and use AI technologies for day-to-day library activities, information service delivery and professional advancement. Digital literacy skill and facilitating conditions indeed advance library organisational and developmental concepts via the introduction of a new paradigm which has strong implications on the motivation-for-acceptance and attitude towards the use of AI by library personnel in university libraries. Digital literacy skill and facilitating conditions thus to a very large extent influence the realisation of the 21st century university libraries. This infer that alongside digital literacy skill of library personnel in university libraries, facilitating conditions, which denotes the

logistics and technical aids needed to use a particular technology, plays important roles in library personnel's attitude towards the use and acceptance of AI in university libraries.

5.3 Recommendations

The following are recommended based on the findings of this study:

1. Motivation-for-acceptance of AI usage by library personnel in universities library services is a function several factors. University libraries management should therefore explore all parameters to keep library personnel motivated to use AI for information services delivery to library users
2. Only positive attitude towards the use of AI by library personnel can facilitate the use of AI for information services delivery. As such, university libraries management should seek to appeal more to the reasoning/intellectual perspective of library personnel to maintain and further sustain the positive attitude of university library personnel towards the acceptance and use of AI for library services.
3. Since university library personnel perceive AI to be easy to use and of immense usefulness to library information service delivery and professional development, university library management should, therefore, provide access to more artificial intelligent technologies and applications (Apps) to ensure continuous motivation-for- acceptance of library personnel.
4. University management should ensure training and re-training of library personnel to better make them digital literacy skilled in the usage of AI technologies and Applications (Apps) for library service delivery and also move then to the proficient and expert stages of digital literacy skills.
5. Library personnel, having realised that AI has come to stay, should seek to better understand its use and ethical application to their personal professional and career

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advancement.

6. Although the provisions of logistics and technical aids (facilitating conditions) for the use of AI is reported, university libraries should always provide advance logistics and technical aids that facilitate AI usage as it evolves and also ensure a good maintenance culture of these aids.
7. University management should evolve from the working stage of having AI usage policy as it pertains to individual library to actual having policies that guide the usage of AI on library information service delivery.
8. University management should also consistently provide internet ready computers, conducive work ambience, uninterrupted power supply, internet facilities with in-house and out-sourced digital literacy skills trainings so as to continuously motivate library personnel's acceptance and positive attitude towards the use of AI for information services delivery.
9. Library personnel should constantly upscale their digital literacy skill; continuously take advantage of available facilitating conditions for the use of AI and always track advancement in AI because AI is not static but constantly evolving.
10. To further ensure library users' satisfaction with provided information service delivery at university libraries, university management should consistently provide internet ready computers, uninterrupted power supply, internet facilities and conducive library ambience to facilitate their AI use.

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5.4 Contribution to Knowledge

This study provides substantial contributions to knowledge on conceptual, theoretical, and empirical levels.

The study acutely investigates key variables, which are digital literacy skills, facilitating

conditions, motivation-for-acceptance and attitude-towards-use of AI, offering fresh perceptions into each as it pertains to library personnel and university libraries. It explores manifold perceptions of the concepts, operationalises them for better comprehension, seek to bridge gaps in existing literatures, and enhances understanding, particularly on the acceptance and usage of AI for library services delivery by library personnel in federal, state and private university in Nigeria. The conceptual framework of the study outlines the nexus between the core variables and their supporting constructs serving as a structured approach to evaluate the impact of the independent variables (digital literacy skills and facilitating conditions) on the dependent variables (motivation-for acceptance and attitude-towards-use of AI). The variables were delineated and measured using distinct metrics to create structured blueprint for further studies and investigations.

Theoretically, this study reinforces existing theories and models in relation to motivation-for-acceptance, attitude-towards-use, digital literacy skills and facilitating conditions. It draws upon theories such as Technology Acceptance Model (TAM); and Theory of Mind/ Trilogy of Mind (TOM) which has been widely accepted and applied to the study of technology adoption and attitude towards technology usage by scholars across the globe. The theories reinforced Perceived Ease of Use (PEU) and Perceived Usefulness (PU) components of Technology Acceptance Model and cognitive, affective and conative components of attitude. And further strengthened skill acquisition theory usage for skill acquisition as well as the facilitating component of the Unified Theory of Acceptance and Use of Technology (UTAUT). By the usage of these grounded frameworks, the study proffers robust understanding and insight into the motivation-for-acceptance and attitude-towards-use of AI by library personnel in university libraries in South-west Nigerian; exploring library personnel's digital literacy skills and available facilitating conditions via constructs within the applied theories and models.

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From the empirical stand point, the study contributes to recent literature as well as expands the scope of studies related to motivation-for acceptance and attitude-towards-use of AI as well as digital literacy skills and facilitating conditions in relation to library personnel and university libraries. Though, studies in motivation-for-acceptance and attitude-towards-use of AI have been explored in existing literatures, empirical studies examining librarians and library environments appears to be under explored. Additionally, empirical studies on specifics of how digital literacy skills and facilitating conditions influence motivation-for-acceptance and attitude-towards-use of AI in a single study are limited in developing countries like Nigeria. The study addresses these gaps by providing empirical evidence on acceptance and attitude towards use of AI as influenced by digital literacy skills and facilitating conditions in university libraries in South-west Nigeria and sets precedence for future studies. Finally, the study provides submissions for improvement on acceptance of AI and attitude towards use the use of AI in libraries.

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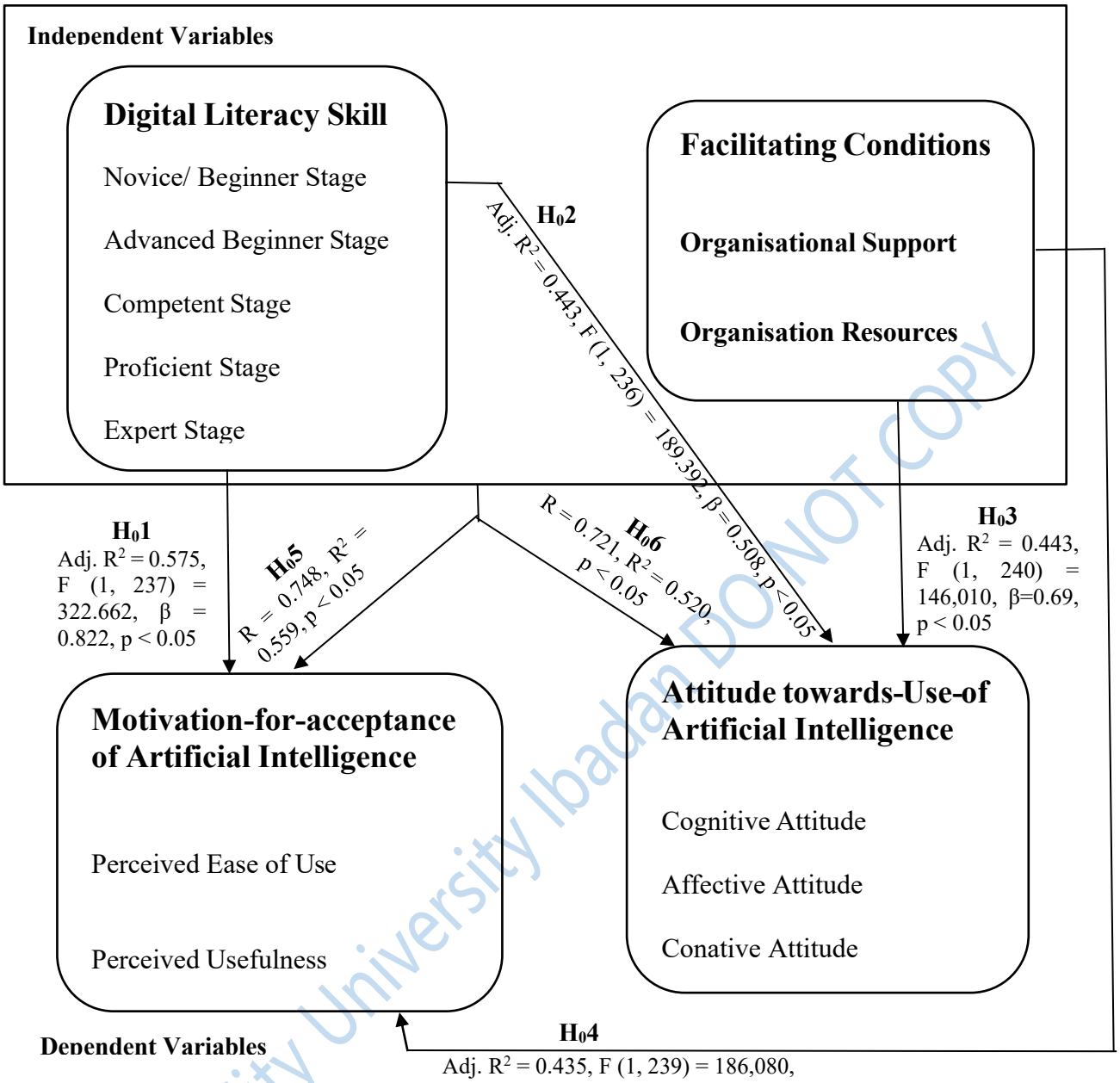


Figure 5.1. Resultant Conceptual Model

Source: Analysed Data, 2025

In conclusion, this study fills significant knowledge gaps in the literature on acceptance of AI and attitude towards use the use of AI by library personnel for information service delivery and professional development and also offers inclusive insight for future studies on these variables. These contributions underscore the importance of harnessing library personnel digital literacy skills and facilitating conditions to motivate acceptance and facilitate positive attitude towards

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the use of AI, providing an insight into how this is influenced by library personnel digital literacy skills and available facilitating conditions across universities in South-west, Nigerian.

5.5 Suggested Area for Further Research

The suggested areas for future study from this research will contribute to a more inclusive comprehension of the variables in this study and should provide practical understanding for university library management, offering tactical perceptions into the encouragement of acceptance and positive attitude towards the use of AI by library personnel. The following are thus, suggested for future studies to further extend this research:

1. This study was carried out in universities in South-west Nigeria, same may be replicated in other parts of the country, like the East or Northern part.
2. Given the evolving nature of the variables in this study and continuous change in library environment, future studies can adopt a different research method aside the one explored in this study.
3. The study investigated digital literacy skill and facilitating conditions as correlates of motivation-for-acceptance and attitude-towards-use of AI in federal state and private universities in Nigeria, a comparative study of these universities may be considered in the nearest future.

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LEAD CITY UNIVERSITY, IBADAN
FACULTY OF COMMUNICATION AND INFORMATION SCIENCE
DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

Questionnaire on Digital Literacy Skill, Facilitating Conditions and Motivation-for-Acceptance and Attitude-towards-Use of Artificial Intelligence (DLSFCMFAATUAI)

Dear Respondent,

I am a doctoral student of the above named institution and I kindly seek your assistance in completing this questionnaire to enable mecomplete my study. The purpose of the questionnaire is to collect information on Digital Literacy Skill, Facilitating Conditions as predictors of Motivation-for- Acceptance and Attitude-towards-Use of Artificial Intelligence. All responses will be treated with utmost confidentiality and used for educational purpose only.

Thank you for your cooperation.

Oluwayinka E. BAIPE
08123979707

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SECTION A. DEMOGRAPHIC INFORMATION

1. Name of library……
2. Gender: Male [ ] Female [ ]
3. Age range: 21 – 26[27 – 32 [33 – 38 [ ] 39 – 44 [ ] 45 – 50 [ ] 50 years and above [ ]
4. Marital Status: Single [ ] Married [ ] Divorced [ ] Widowed [ ]
5. Highest Academic Qualification: ND [ ] HND [ ] B.A [ ] B.Sc [ ] BLIS [ ] MLS/MLIS [ ] M. Inf. Sc. [ ] Ph.D [ ] Others …….
6. Position/ Rank: Library Officer [ ] Higher/Senior Library Officer [ ] Principal Library Officer [ ] Chief Library officer [ ] Assistant Librarian [ ] Librarian II [ ]

Librarian I [ ] Senior `Librarian [ ] Principal Librarian [ ] DUL [ ]

7. Length of service in a university library: 1 – 5 years [ ] 6 – 10 years [ ]
11 – 15 years [ ] 16 – 20 years [ ] 21 – 25 years [ ] 26 – 30 years [ ]

SECTION B: MOTIVATION-FOR -ACCEPTANCE OF ARTIFICIAL INTELLIGENCE

Please indicate the extent of your agreement with each of the statement in the table by a tick (√) in the appropriate box

Strongly Agree (SA) = 4 Agree (A) = 3 Disagree (D) = 2 Strongly Disagree (SD) = 1

S/N	STATEMENTS	SA	A	D	SD
	Perceived ease of use				
1.	My interaction with AI processes has been easy				
2.	I find Artificial intelligence easy to use for information service delivery.				
3.	The use of AI for information services delivery does not confuse me.				
4.	Using AI makes it easy for me to think critically.				
5.	Artificial intelligence makes information service delivery and professional development easy for me				
	Perceived Usefulness				
1.	Artificial intelligence has improved the quality of library service in my university library.				
2.	Artificial intelligence is improving my productivity as library personnel				
3.	Artificial intelligence gives me greater control over information usage				
4.	The use of AI increases the effectiveness of performing tasks in my university libraries				
5.	Using AI is useful in bridging information gap in my university library.				

SECTION C: ATTITUDE-TOWRADS-USE OF ARTIFICIAL INTELLIGENCE

Please indicate the extent of your agreement with each of the statement in the table by a tick (√) in the appropriate box

Strongly Agree (SA) = 4 Agree (A) = 3 Disagree (D) = 2 Strongly Disagree (SD) = 1

S/N	STATEMENTS	SA	A	D	SD
	Cognitive Attitude				
1.	I reason that AI is very important for library personnel				
2.	I reason that there are many beneficial applications of AI in librarianship				

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S/N	STATEMENTS	SA	A	D	SD
3.	My computer skills help me appreciate having a positive attitude to AI				
4.	I am intellectual enough to master any AI needed for information services delivery				
5.	I deliver library services better than the traditional way using AI				
6.	I find AI sinister				
	Affective Attitude				
1.	I am excited about what AI can do in librarianship				
2.	I am interested in using AI for my daily activities as library personnel				
3.	I feel confident about the use of AI				
4.	I feel tense using AI				
5.	I resent using AI technologies as library personnel				
6.	I am concern about AI mining my data as library personnel				
	Conative Attitude				
1.	I have an impulse that AI can have positive impact on library personnel				
2.	I have an intuition that AI can help library personnel perform better at their job				
3.	I have an inclination that AI can replace librarianship				
4.	I have an instinctive dislike for AI usage in university libraries				
5.	I wish using AI would become an important part of librarianship				
6.	I wish that I could be as calm as others appear to be when using artificial intelligence				

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SECTION D: DIGITAL LITERACY SKILL SCALE

Please indicate the extent to which you agree with the following statements by a tick (√) in the appropriate box

Very High (VH) = 4 High (H)) = 3 Low (L)= 2 Very Low (VL) = 1

S/N	ITEM	VH	H	L	VL
DIGITAL LITERACY SKILL ITEMS					
	NOVICE/ BEGINNER STAGE				
1.	My Awareness of Artificial Intelligence (AI) platforms for library information service delivery				
2.	My Ability to identify AI platforms that can impact library information service delivery				
3.	My Awareness of AI platforms that cam impact my professional development				
4.	My knowledge of using AI platforms				
ADVANCED BEGINNER STAGE					
5.	My Ability to use AI technologies for basic library services and my professional development				
6.	My Ability to assess the credibility of information on AI platforms				
7.	My Usage of formatting tools of AI technologies				
8.	My Knowledge of AI copyright laws				
COMPETENT STAGE					
9.	My Usage of AI platforms for cataloging of information resources				
10.	My Competence in building digital information collections using AI platforms				
11.	My Ability to install AI security software on digital devices				
12.	My Knowledge of AI for Indexing electronic resources				
PROFICIENT STAGE					
13.	My Ability to identify AI generative output				
14.	My Ability to apply metadata development skill to emerging technologies like AI				
15.	My Ability to design AI models				
16.	My Competence in library website development				
EXPERT STAGE					
17.	My Expertise in collaborating through emerging technologies like AI				
18.	My Ability to solve technological problems by exploring the settings of AI programs				

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S/N	ITEM	VH	H	L	VL
19.	My Expertise in producing complex, multimedia content in different formats, using a variety of digital tools within the AI environment				
20.	My Expertise of navigating AI domains without any hitch				

SECTION E: FACILITATING CONDITIONSSCALE

Please indicate the extent of your agreement with each of the statement in the table by a tick (√) in the appropriate box

Strongly Agree (SA) = 4 Agree (A) = 3 Disagree (D) = 2 Strongly Disagree (SD) = 1

S/N	STATEMENTS	SA	A	D	SD
	ORGANISATIONAL SUPPORT				
1.	My university management supports the use of AI for library services and staff professional development				
2.	The policy of my university library supports the use of AI technologies that are beneficial				
3.	There are dedicated AI technologies for library service delivery and professional development in my university				
4.	Those that are versatile in AI technologies usage are made heads of unit in my university library				
5.	The policy of my university library provides support for training on AI technologies				
6.	My university library policy is firm on AI copyright issues				
	ORGANISATIONAL RESOURCES ITEMS				
1.	My university management provides facilities to encourage the use of AI technologies for library service delivery and professional development				
2.	My university library is equipped with high-speed internet connectivity necessary to use AI				
3.	My university library has access to uninterrupted power supply which makes usage of technologies seamless				
4.	My university library enlists the help of experts to maintain AI systems				
5.	My university library provides devices through which traditional sources would be converted to digital using AI techniques.				
6.	Provided office spaces are conducive enough to support my use of AI				

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Digital Literacy Skill, Facilitating Conditions and Attitude towards Use and Acceptance of Artificial Intelligence by Library Personnel in South-west Universities, Nigeria

Interview Guide for University Librarians

Interview with University Librarians of universities in Southwest Nigeria

INTERVIEW GUIDE

Sir/Ma,

Kindly share freely and objectively your opinions/answers on the following questions in relation to the above topic and your university.

Section A: Background Information

1. What is the name of your university? .....
2. What is your gender? .....
3. What is your marital status? .....
4. How old are you? .....
5. What is your highest academic qualification? .....
6. How many years of work experience have you in the library? .....

Section B: Motivation-for-acceptance of Artificial Intelligence by library personnel

1. What's your understanding of Artificial Intelligence (AI)?

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

2. What has motivated you to accept using AI and do you think your staff are motivated too?

.....

3. How has the interaction with AI been for your professional development and provision of Library services?

.....

4. Is this technology difficult to learn and utilize by library personnel?

.....

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5. Are you confident that AI will increase the efficiency and effectiveness of library personnel in the provision of information services?

.....

Section C: Attitude-towards-use of artificial intelligence by library personnel

1. Has your library staff shown positive disposition to emerging technologies AI in order to adopt it for the provision of library services and their professional development?

.....

2. Do you think your staff has the requisite skills to effectively use artificial intelligence?

.....
.....

3. Do your library staffs show excitement towards adoption of artificial intelligence for library service delivery and professional development?

.....

4. Does your staff see AI as an enabler or a displacer of their professional competencies?

.....

Section D: Digital literacy Skill of library personnel

1. How would you rate the digital literacy skill level of your library staff? Novice/Beginner, Advanced Beginner, Competent, Proficient, and Expert stages

.....

2. Do your library personnel have the appropriate technical skills to deploy AI technologies both for their professional development and provision of library services?

.....

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3. What are the challenges you perceive would hinder library personnel in developing their AI digital literacy skill?

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

4. How do you think library personnel can develop their AI digital literacy skill?

.....
.....

Section E: Facilitating conditions available to library personnel

1. What are the ways your library provides support (organizational support) for staff library staff in order to be motivated to use emerging technologies like AI?

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

2. What are the structures available in your library to help staff develop their AI digital literacy skills?

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

3. Are there policies in your library that stimulate acceptance and use of emerging technologies like AI?

.....

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Bio-data

A. Personal Data

Full Name: Oluwayinka Esther **Baipe**

Date of Birth: November 29, 1980

Details of Contact Address:

a. E-mail addresses: osolanke@unimed.edu.ng, solankeyinka@yahoo.com

b. Mobile Phone Number: 07066359459

Nationality: Nigerian

State of Origin: Ondo State

Permanent Home Address: 28, Olabisi Johnson Street, Valentino, Ondo State

Next of Kin: Mr. Abraham Oluwaseun Baipe

Contact Details of Next of Kin:

a. E-mail addresses: abrahambaipe@gmail.com

b. Mobile Phone Number: 0706641988

B. Educational Background

1. **Higher Education Institutions Attended with Dates:**

i.	Lead City University, Ibadan, Nigeria	2022 – till date
ii.	University of Ibadan, Ibadan, Nigeria	2015
iii.	Tai-Solarin University of Education, Ijebu-Ode, Ogun State	2010

2. Academic/Profession Qualification and Distinction Obtained with Dates:

PhD Library and Information Studies — in view

Masters in Library and Information Studies — 2015

- Certified Librarian of Nigeria (CLN) — 2016

Library Registration Council of Nigeria

- Certified Medical Librarian of Nigeria (CMLN) — 2018

Medical Library Association of Nigeria

3. Other Distinctions and Awards with Dates — 2013

Best Staff of the Year Award, (Intermediate Category)

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Redeemer's University, Ede, Osun State

C . Work Experience with Dates

Redeemer's University, Ede, Osun State, Nigeria	September 2008- March2016
University of Medical Sciences, Ondo State	April 2016 – till date

Courses Taught

GES 112 (Use of Library, Study Skills and Information Communication Technology)

D. Membership of Professional Bodies

Member, Nigeria Library Association (NLA)

Exco, Nigeria Library Association (NLA), Ondo State Chapter

Member, Medical Library Association (MLA)

Member, Association of Women Librarians in Nigeria (AWLIN)

E. Publications

i. **Thesis/Dissertation**

Baipe, Oluwayinka Esther (2010). The Effect of Communication as Management Strategy on schools Organization Performance: A case study of Redeemer's High School. *An Unpublished B.Ed. (Educational Management) final year long essay/project.*

Baipe, Oluwayinka Esther (2016). "Influence of user needs and satisfaction on patronage of reference services by undergraduates in selected universities in Osun State, Nigeria". A master thesis submitted to the Department of Library, Archival and Information Studies, University of Ibadan, Nigeria.

ii. **Published Journal Articles**

1. Popoola B.O; **Solanke O. E**; Urhiewhu L. O; Olorunyomi G. T. & Folorunso F. (2024). Students' Perspectives on E-Learning Preferences, Effectiveness, and Satisfaction: Evidence from a Nigerian public university. Niger Delta Journal of Library and Information Science (NDJLIS). Vol.5 Issue 1

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2. Igbinovia, M. O., Okuonghae, O., & **Solanke, O. E**. (2023). Research Data Management in University Libraries: Evidence from Nigeria. Rajagiri Journal of Social Development, 15(2), 2-10.
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7. **Solanke, Oluwayinka E.** (2019). University Library Literary Week: A Tool for Quality Reading Habit among Undergraduates in Nigeria. International Journal of Research and Innovation in Social Science (IJRISS) |Volume III, Issue VI, June 2019 |ISSN2454-618
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10. Tabuke, W.P., **Solanke, O. E.** and Igbinovia, O.M. (2016). Self-efficacy and Resilience as Determinants of Information Literacy Skills among Library Personnel. Nigerian Library and Information Science Trend, 8(1):46-63.

11. **Solanke, Oluwayinka E and** Nwalo, K.I. N. (2016). "Influence of User Needs and Satisfaction on Patronage of Reference Services by Undergraduates in Selected Universities in Osun State, Nigeria" (2016). *Library Philosophy and Practice (e-journal)*. 1459. http://digitalcommons.unl.edu/libphilprac/1459

12. Igbinovia, Magnus Osahon, **Solanke, Oluwayinka Esther,** and Ogbole Judith Odanwu (2016). Inducing Illumination in Dark Places: The Relevance of Reference Librarian in the Information Age. Journal of International Trends in Library and Information Technology. Vol.3. No.3, (**Dec., 2016**)

13. Igbinovia, Magnus Osahon and **Solanke, Oluwayinka Esther** (2016). Measuring autonomy, competence, and relatedness of users needs' satisfaction on use of reference sources and services by undergraduates. Journal of Information and Knowledge Management. Vol. 17(1): 149-162 (**July, 2016**)

14. Abdulahi Abdulazeez Olalekan, Igbinovia, Magnus Osahon & **Solanke, Oluwayinka Esther** (2015). Assessment of information needs and seeking behavior of undergraduates in university of Ilorin, Ilorin, Nigeria. International Journal of Information and Knowledge Management. 5(4):1-16..Available at http://iiste.org/journals/index.php/IKM/article/view/21648

BOOK CHAPTER CONTRIBUTION

15. **Solanke, O. E.,** Olatoye A. A. and Ogunsanya, O.O. (2021). **Knowledge management and taxonomy in librarianship**. A chapter contribution in edited book titled "Modern practices in library and information science: themes, trends and issues. A Festschrift in honour of William Abiodun Akinforlarin, CLN.

16. Igbinovia, M. O., **Solanke, E. O.,** & Obinyan, O. O. (2020). **Building Influence: Strategising for Library Advocacy.** A chapter contribution in edited book titled "In Managing and Adapting Library Information Services for Future Users" (pp. 221-241). **IGI Global.**

iii. **Conference Papers**

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1. **Solanke Oluwayinka. E** (2025). Enhancing Access and Usability of Library Resources: Strategies and Practices for Improving User Experience. *Presented at the* 1st International Conference of Library and Information Studies Department, Lead City University, Ibadan held on 17th to 20th February, 2025
2. Popoola B.O; Urhiewhu L. O; **Solanke O. E**; and Folorunso F. (2023). Exploring the use and preferences of e-learning for teaching among older and younger lecturers in a Nigerian University; 61st Annual Conference/AGM of the Nigerian Library Association, held at Akure, Ondo State, Nigeria on July 3rd-7th 2023
3. Popoola B.O; Urhiewhu L. O; **Solanke O. E**; and Folorunso F. (2022). Do UNIMED students want e-learning? A Poster presentation at the 2022 Research Day Conference organised by University of Medical Sciences, Ondo; on February 23, 2022
4. **Solanke Oluwayinka. E** (2022). Digital reference tools and services in academic medical libraries. *Presented at the* Medical Library Association Conference, Delta; October, 2022
5. Popoola B.O and **Solanke O. E** (2019). High maternal mortality rates in Africa: a review on health information gap of pregnant women. *Presented at the* 16th Biennial Conference of Association for Health Information and Libraries and Libraries in Africa (AHILA) *held at* Ibadan, Nigeria 14th -18th October, 2019
6. **Solanke, Oluwayinka E.** and Osuchukwu, Ngozi P. (2018). Libraries and Facilitation of Public Access to Information in Nigeria Society. *Presented at the 56th* Nigeria Library Association (NLA) Conference and Annual General Meeting held at Obasanjo Presidential Library, Abeokuta Ogun State. July, 2018
7. **Solanke, Oluwayinka E.** (2017). Advocacy for University Library Literary Week in Promoting Quality Reading Habit among Undergraduates in Nigeria. *Presented at the* Pan African Writers Association (PAWA) Conference and Continental Colloquium held at Accra, Ghana. 6-9 November, 2017
8. Akinniyi A. Adeleke and **Solanke, Oluwayinka E.** (2017). Fitness of LIS professional education and training for the management of indigenous knowledge in Africa. *Presented at the* Toyin Falola International Conference for Africa and Diaspora (TOFAC) *held at* Adeyemi College of Education, Ondo, Nigeria. 3-5 July, 2017.

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9. Oyetunde, A. Temitope and **Solanke, Oluwayinka E.** (2017). Instructional supervision as correlate of quality assurance of teaching in selected public and private secondary schools in Ede, Osun State, Nigeria. *Presented at the*ToyinFalola International Conference for Africa and Diaspora (TOFAC) *held at* Adeyemi College of Education, Ondo, Nigeria. 3-5July, 2017.

10. **Solanke, Oluwayinka E.**, Sunday Oguntayo, Akinniyi A. Adeleke (2017). Life-long learning fitness of *the use of the library* curriculum in faith-based universities in Nigeria. *Presented at the*National General Studies Programme (GSP) conference *held at* Redeemer's University, Ede, Nigeria. 29-31 May, 2017.
11. **Oluwayinka Solanke,** Samuel C. Avemaria Utulu & Emmanuel L. Adebayo (2014). Towards a user-based perspective to the transformation of museums. Istanbul, Turkey Proceedings of SOCIOINT14- International Conference on Social Sciences and Humanities. 8-10 September 2014.

iv. Others

1. Igbinovia, Magnus Osahon and **Solanke, Oluwayinka Esther** (2015) Shinning a light on the reference Librarian Role as Reference Services Adapt to User's Needs. Library Connect Vol 13 (6). June. Available at http://ow.ly/OXD21

F. Professional Accomplishment

i. Certification by the Library Registration Council of Nigeria

ii. Certification by the Medical Library Association of Nigeria

G. **Conferences, Seminars and Workshop Attended With Dates**

i. Conference

I. The 1st International Conference of Library and Information Studies Department, Lead City University, Ibadan held on 17th to 20th February, 2025

II. The 61st Annual Conference/AGM of the Nigerian Library Association, held at the Dome, Akure, Ondo State, Nigeria on July 3rd-7th 2023

III. The 2022 Research Day Conference organised by University of Medical Sciences, Ondo; on February 23, 2022

IV. The Medical Library Association Conference, Delta; October, 2022

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V. 16th Biennial Conference of Association for Health Information and Libraries and Libraries in Africa (AHILA) *held at* Ibadan, Nigeria 14th -18th October, 2019

VI. The 9th Conference and Annual and Annual General Meeting of the Nigerian Medical Library Association held at the University of Abuja Teaching Hospital form 18th – 22nd November, 2018.

VII. The 56th Nigeria Library Association (NLA) Conference and Annual General Meeting held at Obasanjo Presidential Library, Abeokuta Ogun State. 24th -26th July, 2018

VIII. The Pan African Writers Association (PAWA) Conference and Continental Colloquium held at Labadi Beach Hotel, Accra, Ghana. 6-9 November, 2017

IX. The ToyinFalola International Conference for Africa and Diaspora (TOFAC) held at Adeyemi College of Education, Ondo, Nigeria. 3-5 July, 2017.

X. The National General Studies Programme (GSP) Conference held at Redeemer's University, Ede, Nigeria. 29-31 May, 2017.

XI. The 7th Induction and 3rd Conference of Certified Librarians in Nigeria held at the National Space Research and Development Agency (NASRDA), Obasanjo Space Centre, Airport Road, Abuja Nigeria. 7 – 11 November, 2016.

ii. Seminars and Workshop

i. From idea to grant writing training and practical session. A Pre-Conference Training at the 1st International Conference of Library and Information Studies Department, Lead City University, Ibadan held on 17th to 20th February, 2025 at Lead City University, Ibadan held on 17th to 20th February, 2025.

ii. AfLIA's webinar on 10 Most Useful Apps for African Academic Librarians organized by the **African Library and Information Association and Institutions (AFLIA).** February 27-28, 2019

iii. **Statistical Package for Social Sciences** by **Advance Digital Appreciation Programme for Tertiary Institution (APATI)** organized by the Digital Bridge Institute: Centre for Information and Communication Technology Studies. 26 - 30, **November, 2018.**

iv. AfLIA's webinar on Open Data: Possibilities and pathways for African Libraries organized by the **African Library and Information Association and Institutions (AFLIA).** November 22, 2018

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v. ***Open Data:*** **Possibilities and Pathways for African Libraries** organized by African Library and Information Associations and Institutions (AfLIA) on 22 November, 2018

vi. ***Blended Learning in Librarianship*** **- Fusing Library and Educational Technology *in Library and Information Science (LIS) Profession*** organized by African Library and Information Associations and Institutions (AfLIA) on 26-27th September, 2018

vii. **Microsoft Word Appreciation** by **Advance Digital Appreciation Programme for Tertiary Institution (APATI)** organized by the Digital Bridge Institute: Centre for Information and Communication Technology Studies. **December, 2016.**

viii. **KOHA Training** by Project link Consultants held at the Redeemer's University Library, Mowe Ogun State**, August 16th – 19th, 2011.**

J. Contribution to knowledge

i. Expanding the frontiers of knowledge through the donation of journal to Tekena Tamuno Library, Redeemers University, Ede, Osun State.

ii. Facilitation of a donation of 100 contemporary literary titles to the University of Medical Sciences, Ondo by the Association of Nigerian Authors (ANA)

K. Names and Address of Referees

Prof. A. Oduwole
University Librarian
Tai Solarin University of Education
Ijebu-ode
Ogun State, Nigeria
+234 8033199322

Dr. Olubunmi D. Bakare-Fatungase
Lecturer, Dept. of Information Management
Lead City University, Ibadan
+234 806 636 5378

L. Signature:  Date: 2025

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The University Compliance Certification

This is to certify that **Oluwayinka Esther BAIPE** with matriculation number **LCU/PG/003160** in the Department of Information Management, Faculty of Communication and Information Sciences, Lead City University, Ibadan, Oyo State is in full compliance with the University format and style

Signature _____ Date _____

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