INFLUENCE OF USE OF ACADEMIC SOCIAL MEDIA ON RESEARCH ACTIVITIES OF LIBRARY AND INFORMATION SCIENCE EDUCATORS IN UNIVERSITIES IN NIGERIA

BY

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ABSTRACT

This study investigated the influence of use of academic social media (ASM) on research activities of library and information science (LIS) educators in universities in Nigeria. Seven objectives, seven research questions, and six hypotheses were formulated to guide the study. A descriptive survey research design was used for the study. The population of the study was 348 LIS educators in 37 federal, state, and private universities in Nigeria. The study adopted a multi-stage sampling procedure to select 258 LIS educators in 28 LIS schools in universities in Nigeria. The instrument for data collection was an online questionnaire. The instrument was validated by three lecturers from the Department of LIS and two lecturers from the Department of Science Education, Federal University of Technology Minna. The instrument was pre-tested using Cronbach Alpha. The instrument had the following correlation Section 1=0.708, Section 2=0.917, Section 3=0.885, Section 4=0.823, Section 5=0.924, Section six=0.978 and Section7=0.642, 0.742 and 0.611. One hundred and ninety copies of the questionnaire were returned and correctly filled. The data were analysed by the use of descriptive and inferential statistical analysis. The findings revealed that Google scholar (76%) was the most utilised ASM platform and Research gate which respondents utilised weekly (42%) was the most frequently used platform. It was discovered that reviewing research literature (mean=4.08) was the major research information gathering activity undertaken by respondents on ASM platforms. ASM was found to be used for connecting with people who had similar research interests (mean=3.58). Uploading abstracts of articles (mean=3.27) was the most utilised method in disseminating research findings using ASM. The findings revealed further that citation count was a major method utilised in measuring research impact (mean=3.46). On the factors influencing ASM use, the findings revealed that respondents had a positive performance expectancy on the use of ASM in tracking scholarly impact (mean=4.31) and sharing and promoting research findings (mean=4.31). ASM use was mostly influenced by recommendations from colleagues (mean=3.91). Equally, respondents had electronic devices to utilise ASM (mean=4.18) but did not receive adequate training in its use (mean=1.98). The hypotheses testing revealed that there is a significant difference in the frequency of use of ASM by LIS educators in universities in Nigeria; there is a significant correlation between performance expectancy and the types of ASM used by respondents; there is a significant correlation between social influence and the use of ASM in research collaborative activities; there is a significant correlation between facilitating conditions and the use of ASM in disseminating research findings; facilitating conditions has a significant influence on the frequency of measuring research impact by the use of ASM and there is a significant relationship between social influence and the use of ASM in research information-gathering activities. The study concluded that the frequency of use of ASM was low which may be a result of the work overload of LIS educators in universities in Nigeria. The study recommended that LIS educators should ensure that they patronize various ASM to have access to the various services they offer in enhancing their research activities.

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GLOSSARY OF ABBREVATIONS

LIS: Library and Information Science

ICT: Information and Communication Technology

ASM: Academic Social Media

NIHR: National Institute for Health Research

ORCID: Open Researcher and Contributor Identity

DOI: Diffusion of Innovation

TAM: Technology Acceptance Model

UGT: Uses and Gratification Theory

UTAUT: Unified Theory of Acceptance and Use of Technology

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Universities are institutions of higher learning that offer a broad variety of academic programs, conduct research, and provide a space for intellectual dialogue and debate. Universities are often characterized by their commitment to academic excellence, intellectual freedom, and the pursuit of knowledge. Alemu (2018) views a university as a higher learning institution that brings men and women to a high level of intellectual development in the arts and sciences and in the traditional professional disciplines and promotes high level of research.

Universities are structured around various academic departments such as political science, civil law and library and information science and each specialises in a particular area of study. These departments may offer under graduate and graduate degree programmes as well as provide opportunities for research and scholarly activities. Universities create space for learning, teaching, inquiry, and discoveries where individuals explore their intellectual interests and develop the skills and knowledge necessary for personal and professional growth. Sharma (2015) pointed out that graduates of various disciplines need knowledge about sustainability; and universities help in producing students with new knowledge and skills needed to meet the challenges of sustainability in a community.

Library and Information Science (LIS) discipline is an interdisciplinary field that studies the acquisition, organisation, preservation, conservation and dissemination of information

in various formats such as physical and digital format. Sulyman *et al*. (2021) views LIS as a discipline not limited to the realm of libraries, but extended to every academic field, centre, organisation, corporation, institutions that collects, generates, acquires, processes, organises, stores, preserves, retrieves, shares, disseminates and utilises information in various formats and media. To meet the societal library needs, library schools are established in various educational institutions such as universities, polytechnics, and colleges of technology in Nigeria. They serve as training grounds for library and information science undergraduate and post-graduate students.

The importance of LIS education to nation building cannot be overemphasised. It is worthy of note that LIS education a potential librarian is trained with the required skills and knowledge necessary for knowledge management, knowledge economy and knowledge dissemination. Omehia (2019) opined that LIS education is the specialised formal training for would-be librarians for the acquisition of skills and competencies necessary for both library services and transfer of knowledge.

No matter how good the objectives, curriculum, and physical facilities of a library school might be, its basic quality will depend primarily upon the quality of the library and information science (LIS) educators. LIS educators in universities in Nigeria are expected to train and produce graduates and postgraduates that should compete favourably with their colleagues globally, and fit into the digital world. They are expected to perform this by providing quality teaching, learning, research, and community services for the overall development of the library profession and society at large.

Burneth (2013) stated that despite the various challenges faced by LIS educators, most LIS schools in many developing countries including Nigeria are not keeping abreast of

the rapidly changing/growing digital environment and as a result many LIS students are facing new knowledge and skills demands from employers. Research becomes very essential in providing solutions to these problems. Research leads to the creation of new knowledge, growth of the profession, improvement in the curriculum and decision making, and solving problems in library and information science practice. Oyeyemi *et al.* (2019) defined research as a systematic scientific investigation conducted to discover new facts or get additional information needed to solve a particular problem. Research plays an indispensable role in promoting the advancement of LIS discipline. Thus, research will always be the source of knowledge and innovation of LIS profession.

Despite the importance of research to the LIS profession, LIS educators are not heavily involved in research. This may lead to inadequate attention from funding agencies and major publishing houses. For instance, the index to journals in Education and Library, Information Science and Technology abstract databases between 2000 and 2018 indicated that 1,106 articles were published by LIS professionals in universities in Nigeria in these eighteen years. The breakdown shows that 17.6% of the articles were from the University of Ibadan, 10.2% from the University of Nigeria, Nsukka, 9.9%, and 0.6% were from Delta State University and Federal University of Agriculture, Abeokuta (Okeji, 2018). This number is an indication of the low level of research productivity of library and information science educators in Nigeria. There is a clarion call for library and information educators and practitioners to increase their research activities for it is the key to improvement in research productivity.

Research activities are actions undertaken by a researcher in the pursuit of scholarly endeavours related to research and the production of knowledge. In the field of LIS,

research activities can be viewed as activities undertaken by LIS professionals to enhance their research productivity. The success of a research project lies mainly in the quality of research activities undertaken by a researcher. Research activities involve information gathering (literature search, collection of data), collaboration (knowledge sharing, co-authoring), presentation of results and, monitoring impacts such as the number of articles viewed, citation counts, and the number of downloads (Fenwick and Edwards, 2015; Jones, 2017). Research activities are an indispensable facet of the role of library and information science educators. These activities help to contribute to the development and advancement of the field and ensure that students are receiving the most up-to-date and relevant information in their education. LIS educators must realise that conducting vibrant research is essential to improve their research productivity.

In spite of the importance of conducting vigorous research, there are indications that most LIS educators in Nigerian universities do not embark on rigorous research activities. For instance, Ononogbo (2015) emphasised that most LIS educators in Nigeria do not adequately embark on research activities that are well thought out to address contemporary issues in society and the profession. Thus, LIS issues and critical thinking are not prominent and noticeable. LIS professionals should undertake and keep abreast of new developments in research activities to create new paths and participate in new trends in research.

The way researchers carry out research activities in contemporary societies is changing due to the emergence of digital technologies, one of which is social media. Social media is now part and parcel of life for most people ranging from businessmen, politicians and professionals in different fields, as it provides the opportunity for people from all spheres

of life regardless of race, age, religion, education and social status to interact with one another online. Social media is a web-based technology that is user-based and allows participants to share content, interact, communicate, and build relationships with one another. Social media encourages participants to connect, participate, and collaborate by sharing content. Each social media site has specific functions it performs in the communication and dissemination of information.

However, academics, researchers and professionals mostly use social media for entertainment and communication with friends, family and, colleagues even though the technology has also been designed for academic use. Such social media that can be employed for academic activities are referred to as Academic social media (University of Toronto, 2022).Academic social media (ASM) are social networking sites, platforms and applications that are exploited mainly by academics, researchers, students and scholars in enhancing academic activities such as learning, teaching and research. LIS educators are encouraged to use academic social media tools and platforms in their teaching, learning, research and public relations activities.

ASM can be employed in all processes of research activities, such as research information gathering, research collaboration, dissemination of research findings and measurement of research impacts (Miah, 2012 and Sheomber, 2019).The various advantages of ASM to research include communication, collaboration, networking, visibility, finding relevant documents, disseminating publications, discussing topics, increasing awareness and impact, getting feedback, and staying up to date in one's research interest or area (Tai and Pieterse, 2017).

From a preliminary investigation conducted in some LIS schools in Nigeria, the researcher discovered that most LIS educators utilised ASM platforms majorly to enhance their research information-gathering activities. It was also observed that the Google scholar platform was the most common academic social media platform patronised by them. This might be due to technical factors such as poor internet connectivity and lack of adequate skills in utilisation of ASM. The only way LIS educators can explore and enjoy the benefits of ASM is when they use the various platforms. ASM has the potential to enhance research activities, Examples of ASM that could be used by LIS educators are: Mendeley, Academia.edu. ResearchGate, Google Scholar, Linkedin and ORCID (Tai and Pieterse, 2017). It must also be emphasised that the usage of ASM has the potential to positively influence the` research activities of LIS educators and may lead to increase in research productivity.

There is no doubt that LIS education LIS education is facing various challenges as a result of advances in Information and Communication Technology (ICT), government policies, curriculum development, and changes in patrons' expectations all these have a large impact on the discipline. Igwe *et al*. (2018) pointed out that LIS education is facing some contending issues such as nomenclature crisis, curriculum, course contents, contemporary programmes and infrastructure. If this scenario is not urgently addressed it may affect the quality of LIS programme and the quality of graduates that are turned out in LIS schools. The solutions to these issues may be addressed by LIS educators utilising new technology such as ASM platforms in enhancing their research activities. Thus, this study seeks to find out the influence of use of ASM on research activities of library and information science educators in universities in Nigeria.

1.2 Statement of the Research Problem

One of the keys to improving the quality of research in any field of study is to conduct a vibrant research activity. Engaging in research activity result in the creation of new knowledge that will help in the growth of any profession. LIS educators in universities in Nigeria are expected to engage in research activities that have the potential to help in the growth of the LIS education.

In today's era of global technological advancement, Information and Communication Technology (ICT) has become indispensable in research activities. One of such new developments in ICT is academic social media (ASM). ASM platforms when utilised enhance quality of research activities such as research information gathering, increase visibility of research outputs, promote collaboration and provide a forum for research impact assessment.

However, studies have shown that LIS educators' research activities are low (Okeji, 2018). It has been observed that ASM has the potentials to enhance research activities. Consequently, from the researcher's extensive search of literature no work has been carried out on the influence of use of ASM on research activities of LIS educators in universities in Nigeria. Hence, this study will attempt to provide answer to the following question: what is the influence of use of academic social media on research activities of LIS educators in universities in Nigeria?

1.3 Aim and Objectives of the Study

This study aims to determine the influence of the use of ASM on the research activities of LIS educators in universities in Nigeria. The specific objectives are to:

1. ascertain the types of ASM used by LIS educators in universities in Nigeria;

2. determine the frequency of use of ASM by LIS educators in universities in Nigeria;
3. find out the extent of use of ASM in research information-gathering activities of LIS educators in universities in Nigeria;
4. determine the level of use of ASM in research collaborative activities of LIS educators in universities in Nigeria;
5. find out the extent LIS educators in universities in Nigeria disseminate their research findings using ASM platforms;
6. determine the frequency at which LIS educators in universities in Nigeria measure their research impact through ASM; and
7. find out the factors (performance expectancy, social influence, and facilitating conditions) that influence the use of ASM platforms in enhancing research activities of LIS educators in universities in Nigeria

1.4 Research Questions

The following research questions guided the study:

1. What are the types of ASM used by LIS educators in universities in Nigeria?
2. What is the frequency of use of ASM by LIS educators in universities in Nigeria?
3. What is the extent of the use of ASM in research information-gathering activities of LIS educators in universities in Nigeria?
4. What is the level of use of ASM in the research collaborative activities of LIS educators in universities in Nigeria?

5. To what extent do library and information science educators in universities in Nigeria disseminate their research findings using ASM?
6. At what frequency do LIS educators in universities in Nigeria measure their research impact through ASM?
7. What factors influence the use of ASM in enhancing the research activities of LIS educators in universities in Nigeria?

1.5 Research Hypotheses

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

1. There is no significant difference in the frequency of use of ASM by LIS educators in universities in Nigeria.
2. There is no significant correlation between performance expectancy and the types of ASM used by LIS educators in universities in Nigeria.
3. There is no significant correlation between social influence and the use of ASM in research collaborative activities by LIS educators in universities in Nigeria.
4. There is no significant correlation between facilitating conditions and the use of ASM in disseminating research findings.
5. Facilitating conditions has no significant influence on the frequency LIS educators in Nigeria universities measure their research impact using ASM.
6. There is no significant relationship between social influence and the use of ASM in research information-gathering activities by LIS educators in universities in Nigeria.

1.6 Significance of the Study

The findings of this study are expected to be of great significance to LIS educators, researchers, university management and students in Nigeria and abroad.

The study is expected to benefit LIS educators and researchers in universities in Nigeria because it will create more understanding of various research activities that can be enhanced by the utilization of ASM.

The recommendations of the study are expected to be beneficial to the university Managements in their decisions in formulating ASM policies and provide enabling environments such as access to speedy and regular internet services and organising seminars and training for LIS educators and other faculty members in various disciplines.

Researchers and students who will conduct further studies on a related topic are expected to find this work relevant and useful in their empirical review. Researchers and students are also expected to find the empirical works reviewed useful when carrying out their studies for it exposed the gap in knowledge as it relates to ASM and research activities of LIS educators in universities in Nigeria and all over the world. LIS educators, researchers and university Managements are expected to find the theories reviewed useful for they exposed the various factors that could help in the effective utilisation of ASM in enhancing research activities. The findings are expected to also add to the existing body of knowledge in Library and Information Science.

1.7 Scope of the Study

The study investigated the influence of the use of academic social media {ASM} on the research activities of LIS educators in universities in Nigeria. The study appraised the

types of academic social media, frequency of use of ASM and the extent of use of ASM in research information-gathering activities. It also examined the level of use of ASM in research collaborative activities, the extent of use of ASM in the dissemination of research findings, frequency of use of ASM in measuring research impact, and factors influencing the use of ASM in enhancing research activities. The geographical scope of the study comprised library and information science educators in universities offering LIS in Nigeria. The population was drawn from 17 federal universities, 15 state universities and 5 private universities offering library and information science in universities in Nigeria.

1.8 Operational Definition of Terms

The following terms are defined as used in the context of the study:

Academic social media: Social media platforms used by LIS educators in universities in Nigeria in enhancing their research activities such as information gathering, collaboration, dissemination of research findings and, measuring research impact.

Influence: The effect of the use of ASM in facilitating research activities of LIS educators in universities in Nigeria.

Library and Information Science Educators: LIS educators are the full time teaching staff designated to the department of library and information science in universities in Nigeria charged with the responsibilities of teaching, research, publication, supervision, and community services.

Research Activities: Activities that are carried out by LIS educators in universities in Nigeria to generate new knowledge such activities include information gathering, collaboration, and dissemination of findings and, measurement of impact.

Universities in Nigeria: Universities situated in Nigeria offering LIS.

Use: Employing ASM platforms by LIS educators in universities in Nigeria to enhance their research activities.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptual Framework

The conceptual framework of the study is presented in Figure 2.1.

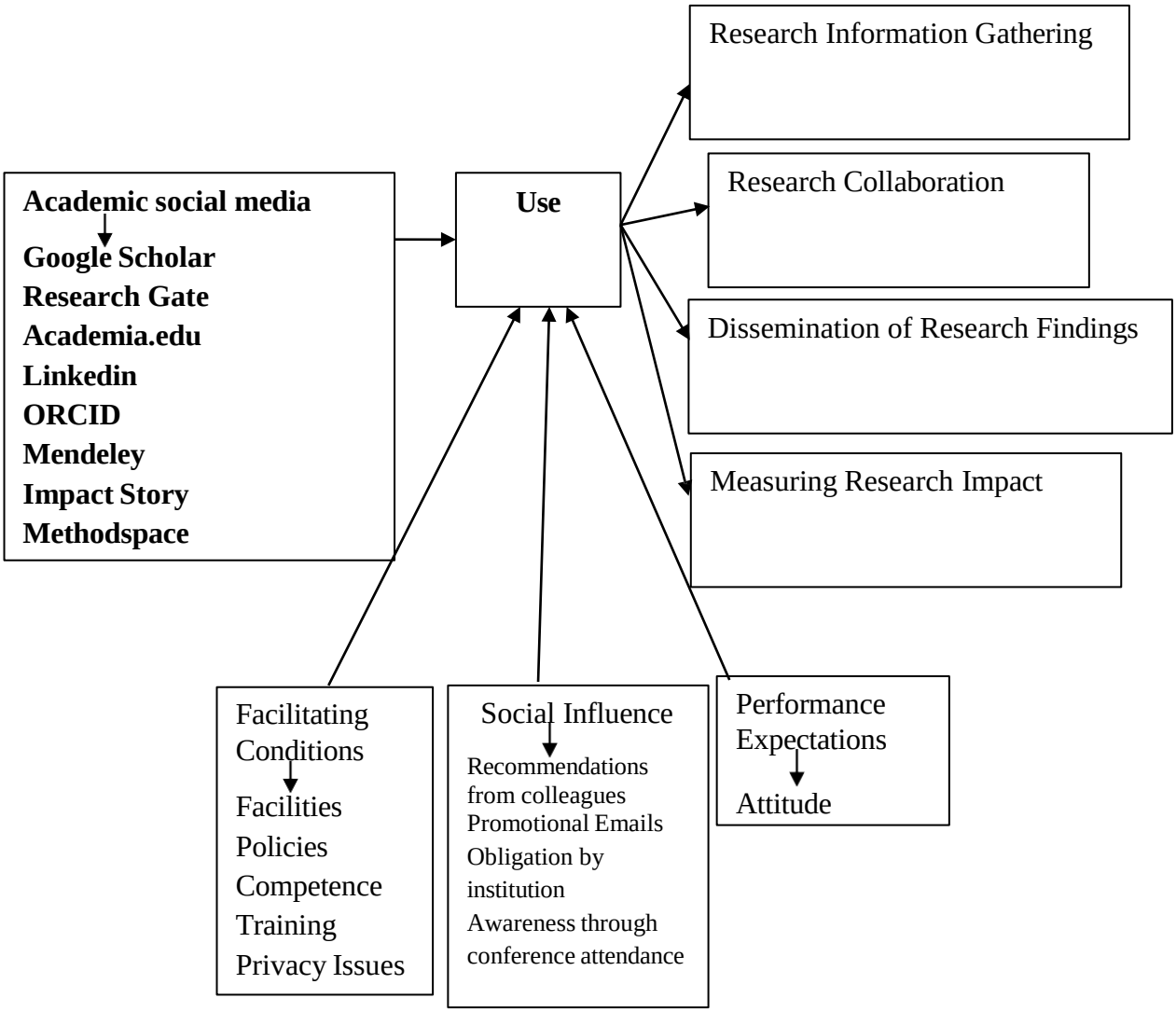

Figure 2.1: Model of Influence of Academic Social Media use on Research Activities as Developed by the Researcher

The model in Figure 2 .1 represents the conceptual framework of the study. It represents the relationship that exists among the independent variable, intervening variables, and dependent variables. The independent variable is academic social media use such as

Google Scholar, ResearchGate, Academia.edu, Linkedin, ORCID, Mendeley, Impact story, Methodspace. This variable is believed to have a direct effect on the research activities of LIS educators in universities in Nigeria. The dependent variables of the study are research information gathering activities; research collaboration, dissemination of research findings and measuring of research impact. Furthermore, performance expectation (positive attitude), social influence (recommendations from colleagues, receiving promotional emails from academic social media platform, obliged by institutions and awareness through conference attendance) and facilitating conditions (facilities, policies; and competence, training and privacy issues) are presented as the intervening variables of the study. These intervening variables may influence the use of ASM in enhancing the research activities of LIS educators. The dependent variables of the study are the research activities of LIS educators such as research information gathering, research collaborative activities, dissemination of research findings, and measurement of research impacts.

2.2 University

Universities in any society provide the highest level of educational attainment. There are various definitions of university. Encyclopedia Britannica (2023) defines a university as a higher education that comprises of various colleges, graduates and professional schools and having the authority to confer degrees in various fields of study. Alemu (2018) views a university as a higher learning institution that brings men and women to a high level of intellectual development in the arts and science and in the traditional professional disciplines and promotes high level of research.

The major functions of university are teaching, learning, community development and research. Steele and Rickards (2021) maintained that the five cardinal functions of a university in any society are: learning, teaching, research impact, external leadership and internal operations. Nwakpa (2015) emphasised that universities around the world are differentiated by the following criteria: the level of her involvement in research, the type of problems they attempt to solve and the impact of any results they obtain on the society and the world at large.

Mathew (2021) opined that a university exists for the creation and dispersion of knowledge. They are generators of innovation and through the vast experience of those who teach and do research, it could also be said that they are repositories of knowledge. Khelalfa and Hadidane (2022) noted that universities are important institutions in the society, as they are the areas in which the frameworks that run the rest of the institutions in society are formed. Association of American Universities (2023) stated that universities carry a dual benefit. They create the foundation for major advances in such areas as health and medicine; communication, food economics, energy and national security. They also help to educate students to be scientific leaders and innovators.

To achieve their roles in education, universities in Nigeria and the world at large place much emphasis on research. Sulo *et al.* (2012) views research undertaken in universities as an important ingredient that leads to generation of new knowledge, engenders innovation, enhances the quality of teaching, staff competencies and improve their economic status. Bako (2005) also stated that research and development generated by universities more than anything else has contributed to the rise and expansion of the world economy.

In the same vein, Onwujekwe (2018) highlighted the following importance of research to a university: enhances the global visibility of the university, enhances the ranking of the university, enhances global visibility and ranking of individual faculty member, attracts income to the university and the individual faculty member, attracts world class faculty to the university, keeps staff and students busy, enhances teaching and other academic activities and research is essential for evidence based decision making and for economic development.

Similarly, Aminu (2017) noted that universities in Nigeria must show themselves as universities of knowledge that are concerned with all human beings in all indices. Novel ideas coming from universities should result in new innovation and economic benefits to the society. In recognition of the role of universities in research, Onwujekwe (2018) stated that a university will not be said to be functioning properly until it starts generating research outputs that will enhance institutional and national development. Similarly, Bako (2005) explains that the main criteria for ranking world class universities is not much on the volume of teaching, students population or community service a university could master, but on research output measured by the breakthrough findings published which would increase knowledge.

Ogbogu (2013) affirmed that the research output of universities in Nigeria is low and they require vibrant research activities to progress. Ibeh (2022) stressed that after a century of academic knowledge generation in universities in Nigeria, scientific breakthrough remains rare. Equally, Nwakpa (2015) noted that no university in Africa features among the two hundred in the world which is likely an indication of low quality of teaching and especially research in this part of the world.

Chikwe *et al*. (2015) pointed out that research in universities in Nigeria is in a poor state, as a result of inadequate funding, lack of facilities, lack of awareness and poor communication network. Igiri *et al.* (2021) opined that researchers in universities in Nigeria are faced with various challenges such as family challenges, financial constraints, inadequate research skills, inadequate motivation from employer, brain drain, inadequate training, inadequate research grants, infrastructural inadequacy, and lack of research funding.

Onwujekwe (2018) argued that for universities in Nigeria to improve their quality and quantity of research, they must develop a research culture. Igiri et *al.* (2021) advocated that to improve researches emanating from universities in Nigeria, policies directed at the promotion of research should be formulated by policy makers. Such policies include: innovation policy, technological prowess and establishing support systems.

2.3 Research

According to Basu (2020), the term research is made up of two words re and search. Re: means again and again, while search means to find out something. Research is a careful study of a subject, especially to discover new facts or information about it. Haruna (2010) defines research as a process of finding out new information, new methods of doing things and an extension of the boundary of knowledge. The main purpose of conducting research is to find solutions through a cautious and systematic approach which involves the collection, analysis, interpretation of pertinent data and, dissemination of findings. Fleetwood (2023) views research as scientific studies conducted to increase the body of knowledge and employ such knowledge to invent new technology and invent new

applications. Research is conducted to join hands with fellow researchers to help the world in solving problems that arise today.

There are various characteristics of research, Baru (2018) stated the following as the characteristics of research: research is a systematic and critical investigation of a problem embedded in the society, it aims to interpret and explain phenomenon logically and systematically by adopting scientific methods. Research is based on empirical evidence, observation and experience and develops principles or theories which are directed towards finding solutions to the research problems and research is carried out to find answers to research problems.

Equally, Learnn (2018) opined that the main purpose researchers in any field of study conduct research is to inform action, to prove a theory and contribute to developing knowledge. Research can be defined as a process of creating new knowledge systematically to add one's contribution to the body of knowledge. The importance of research to any nation is indispensable. It enables a country to facilitate and accelerate economic development and societal wellbeing.

The core components of scientific research are: the identification of a problem, proffering solutions through the collection of data and analysis of data and, subsequent dissemination of research findings to the general public (Kpolovie and Onosgagbejbe, 2017). Nwakpa (2015) highlighted the following as benefits of conducting research, adequate research results in the provision of qualitative education to the life of a nation, qualitative education results in the acquisition of useful skills, values, knowledge, attitude, ideas and competence necessary for self-reliance. Research work leads to quality

education, liberation from ignorance and poverty, research findings free man from poverty and ignorance and it leads to better exposure.

No nation can ever succeed when the majority of its populace is not literate. Adequate research leads to the discovery of new techniques, ideas, and new ways of doing things which result in wealth creation and improvement in standard of living. Quality research findings can transform society positively and also improve the overall quality of life. Without research, old knowledge will become obsolete. Researchers must come out with the novelty of ideas and guard against repetition. Research should be reproductive to have an impact on society. When researchers effectively embark on research there will be solutions to the social and natural problems that affect human wellbeing in the immediate environment and globally.

It is pertinent to note that, Research Consulting (2019) identified various weakness associated with researches conducted in Nigeria. These include the following (a) Low research productivity: The publishers maintained that although Nigeria has several universities but the researches emanating from these universities are few compared to the population of Nigeria. (b) Low quality of research production: the quality of researches that are being carried out in Nigeria are low and have resulted too few citation counts. According to Scimago (2019) Nigeria produced 9,299 scientific papers in 2018. This account for about 12% of the research output emanating from Africa, this translate to 48 publications per one million persons living in Nigeria. This is as a result of the over population in Nigeria. (c) Lack of parameters in assessing quality of research conducted by researchers in their institutions. As a result of this development, the productivity of a researcher is assessed based on the number of publications he has.

In the same vein, National Centre for Technology Management and the Global Development Network (2020) posited that the following are the factors affecting the quality of researches in Nigeria (a) poor communication between researchers and policy makers is negatively affecting the utilisation of research findings. Policy makers are most times interested in funding a research when they are carried along in the research process. (b) Policy linkages in social science research are weak. Nigeria is yet to adopt policies recommended in research findings in making decisions. Most of the decisions made by government and organisations are based on political and ideological considerations.

To Lee (2020), LIS research is difficult to define because of the broad scope of the field. The broad scope of the field of LIS includes information retrieval, information behavior, information literacy, and organisation and management. The author however explained that research in LIS is conducted to solve professional problems, develop tools and methods to analyse library services, the behavior of users, benefits of services rendered to users and develop theories on which to hinge library practices. Researches in LIS are carried out for new discoveries and innovations in the profession. Dongardive (2013) views research in LIS as the gathering and analysis of original data on a problem related to librarianship and conducted within the library schools according to scientific and scholarly standards. The author further stated that research in the field of LIS is mostly survey which is mostly conducted by LIS educators and practicing librarians.

Research leads to the creation of new knowledge, growth of the profession, better decision making, problem-solving and career advancement (Sacchanard, 2012). Tosife and Lwoga (2014) noted that LIS research contributes to problem-solving and better decision-making. Kennedy and Brancolini (2011) emphasized that research is critical for

LIS educators for it serves as a vehicle for advancing their career and growth. Dongardive (2013) highlighted the following as the importance of research in the field of LIS: through research, LIS educators can expose their study to a body of knowledge that they were unable to during the earlier stage of professional training; library professionals can criticize and improve professional knowledge and expertise which in return will help to improve professionalism in the field of LIS and help to keep LIS professionals ready for the information age. The profession now have to deal with online services and complex technology. Research is the major tool of the development of LIS education. LIS educators can make significant strides only when they recognise this.

It must be emphasised that as a lecturer researcher the reason for researching is beyond reward purposes. Idioti and Bozimo (2012) believe that research is necessary in LIS because it provides a sense of self-satisfaction that comes from communicating the researcher's ideas to a broader audience, creating or building an area of expertise and getting recognition within and these are beyond promotion, tenure or salary. Obura and Kingongo-Bukenya (2011) posited that research is necessary for the LIS discipline following the current state of curriculum development, and review, and to keep abreast of developments in the field. The state of LIS curricula has a direct impact on the level of professionalism exhibited by faculty members in LIS schools. Technology infrastructure at LIS schools such as digital libraries and other web-based information systems requires LIS educators to engage in research activities to be able to adapt to these technologies (Obura and Kingongo- Bukenya, 2011). According to Tosife and Lwoga (2014) research in LIS contributes to problem-solving and decision-making in libraries and information centers, enhances the management and provision of information services and creates new

knowledge for the continued development of LIS as a profession. Ochalla (2012) however feels that besides being a recipe for generating solutions, research is done to fulfill learning, domestic, and career needs such as promotion and securing tenure, recognition, and visibility.

Notwithstanding the importance of research in the field of LIS, it is faced with several problems. Gichygu (2018) asserted that LIS in Africa is not a highly researched field. This is also common in countries where government influences the research productivity of faculty members through funding. The author further noted that LIS researchers may be fewer than other researchers in other fields and the researches are mainly conducted in library schools. There are various types of research designs such as survey, correlation and experimental. LIS researchers often adopt a descriptive survey research design when conducting research.

In the same vein, Koufogiamakis (2015) stressed that most of the studies in LIS were descriptive and very few were comparative studies, randomised controlled trials or systematic reviews. As a result of this, there are several opportunities for LIS researchers to apply more rigorous research methods in enhancing the research literature in LIS. There is a need for LIS educators to adopt technology in enhancing their research activities and to employ more rigorous research methods. It should be stressed that if the LIS educators fail to improve the literature in LIS it will be difficult to improve the quality of teaching, learning and research in LIS schools. Therefore, research holds the key to the development of the LIS discipline.

Poor communication and networking among LIS educators is another problem hindering high-quality research among LIS educators. Ochalla (2012) observed some of the reasons

behind low involvement in research by LIS educators as weak communication links among LIS educators, inadequate education in research methods and natural resistance to change on new research trends. If research in LIS education must be current and impact advances in knowledge, LIS researchers must be ready to share knowledge by asking questions and learning new methods from colleagues around the globe. Ponti (2013) in her research on the promotion of LIS faculty research practice, found a scarcity of LIS literature as a major bottleneck. In light of this, she proposed the idea of co-authoring among practitioners, academics and, students.

To improve the status of the LIS profession there is a need for researchers in the field to conduct quality research. Connaway and Powell (2004) stressed that the two primary marks of the library profession are that it is a service-oriented profession and a body of theoretical knowledge. The authors stated that librarianship now possesses the first as a service-oriented profession but not the second which is a body of theoretical knowledge. If librarianship is to merit the designation as a body of knowledge LIS scholars must continue to conduct scientific methods of research to analyse relationships among the problems facing the field and proffer solutions.

It must be emphasised that the primary aim of researching in the field of LIS is to solve the problems facing the discipline to strengthen the capacity of LIS education in Nigeria. This should be the researchers' primary aim, not the reward they obtain for conducting research such as promotion. When researchers see research as a way of fulfilling their curiosity and proffering solutions to identified problems, more meaningful research will be conducted in various library schools by LIS educators.

2.4 Research Activities

As researchers, LIS educators are expected to engage in research activities that are thorough, engaging, and insightful. Obura and Kingongo-Bukenya (2011) posited that as a result of technology, infrastructure such as digital libraries, and other web-based information systems require LIS educators to engage in research activities to adapt to the technological changes. There are various definitions of research activities. According to the University of Southern Queensland (2018), research activities refer to activities that result in the creation of new knowledge such as synthesis and investigation of previous research that may lead to a new and creative outcome. Western Sydney University (2018) stressed that research activities are activities that support the carrying out of research. Marion (2017) opined that the field of study often determines the research activities faculty engages in for increased research activities leads to an increase in research funding and higher ranking of the university.

Research activities in most nations of the world are carried out by universities and research institutes. Onwujekwe (2018) buttressed this fact by stating that most discoveries in the world from the invention of the telegraph, the discovery of AIDS and the organization of the internet were carried out in universities. The writer further stated that in the USA, 58% of basic research is conducted at universities. Research involves identification of the problem, assessment of the impact of the problem, proffering solutions to the problem through collection and analysis of data, revealing the findings and solutions to the general public and, evaluating the research impact

Research activity in library and information science refers to the activities undertaken by LIS educators in the pursuit of scholarly endeavors related to research and the production

of knowledge (Gessner *et al.,* 2017). Klain-Gabby and Shoham (2016) pointed out the various roles research activities play in research. These include: providing answers to specific questions, keeping researchers up to date regarding recent developments in their fields and verifying the reliability of the information, helping researchers to understand the major trends in their field and getting feedback about their work.

Ketchum (2017) stated that research is grouped into four major activities: performing research, communicating knowledge, applying knowledge and evaluating research. In a nutshell, research activities in LIS can be grouped into the following parameters: Information gathering, collaboration, dissemination of findings and, measurement of impact.

One of the research activities LIS educators are expected to engage in is information gathering. The importance of information to research cannot be overemphasised. Satiya (2013) noted the following as the importance of information: information is an essential ingredient for social, economic, political, educational, technological and moral advancement of any nation. It is the basic ingredient for innovation and research; it gives a competitive advantage over rivals in business and education. It is an exhaustible economic resource and commodity that saves time and space and can effortlessly replace capital and labour.

It must be stressed that research work requires researchers to have adequate information on the state of the subject to proffer a solution to the research problem. The importance of information to research cannot be overemphasised. According to Lisbnetwork (2014), there is a need for information in research because it helps in generating new knowledge and skills and support research to obtain effective and fruitful findings. It is necessary

to acquire state of the art information on the research problem to identify the gaps in the research; information stimulates the thought process of a researcher and information enables a researcher to be well informed about the current advancement in his/her field. Information is relevant to a researcher for it enables a researcher to increase his/her knowledge of the research problem. To effectively search and utilise information LIS educators must ensure they effectively and efficiently participate in the research information gathering process.

Information gathering can be defined in various ways. Thanmania (2017) defined information gathering as a process by which researchers gather information from a variety of sources and for a variety of reasons. During the information gathering process, researchers are aware of various sources, opinions and approaches that will enhance a researcher's work. Information gathering is a process whereby researchers identify and obtain information from various sources to conduct research. There is more than one method that can be successfully utilised in gathering information when conducting research.

Salami *et al.* (2020) posited that LIS professionals are expected to gather enough information on the research problem they want to solve, through adequate literature search (reading print and online resources), attending conferences, seminars, webinars, workshops and also asking questions from peers who are based within and outside the country. In the same vein, Ifejeh *et al.* (2018) maintained that for meaningful research to take place, researchers must be aware of the state of the existing knowledge and how to have access to information that will help them to build up their theories and findings.

The literature search is also carried out during the information gathering process. Abduldayan *et al.* (2016) opined that during the literature review process researchers are expected to focus on areas of interest related to their statements of problem. The authors also maintained that literature can be reviewed from the following sources: journal articles, books, and thesis and conference proceedings among others.

Gessner *et al.* (2017) also stressed that reading research literature is crucial for LIS professionals for it helps them to understand recent trends in research and technology. A literature search is usually an essential first step in any research. It provides the researcher/researchers with a pool of information on his/her subject matter and enables him to avoid duplication of research. Connaway and Powell (2004) opined that it is important for a researcher to review a research report for it helps a researcher to obtain a better understanding and evaluate critically the research findings of others. This will enable a researcher to question some previous reports and identify the shortcomings.

LIS educators must not only read available literature obtained from libraries and various databases they must also ensure they locate literature from other information sources in order to richly build up their literature reviews. During the process of information gathering, LIS educators can engage in personal communication with stakeholders through the administration of the questionnaire, conducting interviews and, focus group discussions. This will enable a researcher to have access to firsthand information in answering research questions, testing hypotheses and theories (Salami *et al.,* 2020). Marion (2017) advocated that during the information gathering process, researchers should endeavour to locate funding agencies which could be external or internal funding to support their research undertakings

According to Tufts University Libraries (2020), the information gathering process also enables LIS educators to identify publication outfits to publish their articles. This is obtainable through the journals they read, their colleagues read, publish and the journals they cited in their works. The publication further stated that this exercise is important for it enables a researcher to identify and evaluate journals and predatory publishers. LIS educators as researchers should have prior knowledge of secondary data available in the field of study during the information gathering stage. This is to avail them of the opportunity to draw a conclusion and answer or solve research questions (Aryal, 2020).

The knowledge gathering process can also be seen as a process where researchers source information and data to enhance their ongoing research. The information-gathering process also provides the researcher an excellent opportunity to gather appropriate information to provide ideas on possible areas to focus on. It is also important that whatever method a researcher decides to utlise in gathering information for research will provide relevant and useful information to provide answers to research problems. Depending on the nature of research that is been carried out, various sources of information gathering can be employed in particular research.

Collaboration is another research activity that LIS educators should embark on. Livini *et al.* (2017) maintained that research in the field of LIS has grown geometrically; this has led to researchers exploring innovative ways such as collaborative research to find a way forward. Collaboration can be defined as sharing knowledge, ideas, working as a team to achieve the desired result (Livini *et al.,* 2017). Research collaboration is the process whereby two or more researchers with different talents, resources and knowledge come

together to accelerate the research process and provide innovative solutions to the research problem.

To Lai (2011), research collaboration is a mutual commitment by researchers in coordinated efforts to solve a research problem. Fari (2015) maintained that research collaboration is common research focus among researchers in a particular field or multi-disciplinary field that are likely to both be known or unknown to each other. Collaborative research is increasing among scholars due to the following reasons: it helps researchers to improve their popularity and visibility, changes the pattern of research funding, and increases specialisation in different areas of disciplines. Ponti (2013) believes that collaborative research is striving because researchers can gain experience, apprentice and researchers acquire research training from experienced researchers.

The importance of research collaboration cannot be overemphasised. Cheng (2017) stated that research collaboration has become prevalent in many fields because research problems are becoming more complex. As a result of this development, several researchers have to come together to pool their knowledge and resources to solve the research problem. Research is never conducted in isolation. Lack of transfer of knowledge among researchers can affect the quality of research for no man is an island. Attendance at conferences, workshops and seminars would assist in alleviating the problem of inadequate interactions among researchers. This, however, is an expensive, time-consuming and unsustainable way of interaction among researchers. It should be stressed that there is a need for researchers to employ other media to communicate with one another which complements physical avenues of communication such as conferences, workshops, and seminars.

There are various reasons why collaboration is necessary for LIS research. Gichygu (2018) advocated that LIS educators need continuous collaboration due to the following reasons: changing patterns of funding research, the desire by researchers to increase their popularity and visibility and the need to gain experience. LIS educators need continuous collaboration to gain experience and to train LIS students on research methodology in the most effective ways possible. Sacchanard (2012) pointed out that research collaboration will enable LIS faculty members to contribute to the development and advancement of LIS as a field and a profession.

Collaboration helps to strengthen the ability of faculty members in LIS schools in improving the quality of teaching, learning and research. Shonaike (2016) maintained that due to lack of research facilities in most universities in Nigeria it is necessary for LIS educators to collaborate with researchers in advanced countries where working conditions for research are more favourable. The examples of such collaboration are: technology transfer, use of state of the art-equipment, access to up-to-date data information as well as opportunity to search past publications, peer review and publications in reputable journals.

Collaboration may be mirrored in multi-disciplinary and inter-disciplinary research groups. Jones (2017) stressed that the increasing specialization of skills in the world means that researchers need bigger groups with more and more specialists to come out with novel research findings Collaborations can be more effective if library and information scientists create research groups among colleagues within the profession and/ or outside the profession and are active participants. Mydin *et al.* (2021) highlighted the following as the benefits of research collaboration: when researchers collaborate with

other colleagues it helps to keep research interest fresh and provide novel ways for approaching research studies, provides researchers with new skills, theories and methods that enable them to be unique, innovative, marketable; and collaborative research provide an opportunity for researchers to learn alternative ways of solving research problems. Togia and Malliari (2017) maintained that collaboration between LIS educators and professionals on one hand and researchers in other fields, on the other hand, can positively influence research orientation, development, methodology and the theoretical perspective of LIS research. Collaboration could take the form of co-authoring, knowledge creation, knowledge sharing and data sharing (Gichygu, 2018).

Collaborative research can take place in various forms among researchers, LIS educators inclusive. Gichygu (2018) highlighted the following as the various aspects of collaboration among LIS educators: interaction among colleagues, accessing instrumentation, sharing data, sharing resources, offering general advice, sharing ideas through correspondence, brainstorming at conferences and workshops, online forums and conducting joint research program. Maluleka and Onyencha (2016) stressed that research collaboration in LIS schools has improved over time and they were mainly between colleagues from the same department and institution. Given this, the researchers suggested that a research project that is undertaken in partnership with scholars from western countries will have a higher citation impact than that conducted among researchers that are resident in sub-Saharan Africa. It must be stressed that research collaboration enables a researcher to learn about current techniques in conducting research and helps a researcher to gain a more global perspective especially in international collaboration. Researchers can also achieve high impact research findings.

Collaborative research has not been fully embraced by LIS educators because of poor access to connectivity with fellow researchers. The index to journals in Education and Library, Information Science and Technology abstract databases between 2000 and 2018 indicated that 1,106 articles were published. Out of the 1,106 articles analysed, 47.6% were single-authored papers while 52.4% were mainly collaborative research with colleagues within Nigeria (Okeji, 2018). This is an indication of inadequate international and multi-disciplinary research collaboration among LIS educators. This was also corroborated by Ukachi (2015) opined that collaborative research especially international and multi-disciplinary collaborations have not been fully embraced by LIS educators in Africa because they were having problems with where and how to connect with researchers at various levels. Ochalla (2012) also noted that collaborative research in LIS education is relatively low as a result of poor networking. H stressed that with the new trend in research, there appears to be a lot of potential for the growth of collaborative research among LIS educators in Nigerian universities.

Generally, Information networking among researchers connotes cooperation and sharing of information among professionals to improve their skills, performances and the exposure of the outcome of their research findings for maximum use by stakeholders. Collaborations can be more effective if library and information scientists create research groups among colleagues within the profession and/ or outside the profession and are active participants. They are also encouraged to create research groups with the following professionals; Methodologists, Information and Communication Technologists, Statisticians, Measurement and Evaluation professionals, Agriculturists, Law Professionals and Educationists.

In addition, research activity cannot be complete if research findings are not disseminated to the intended audience. Therefore, dissemination of research findings is another research activity in the field of LIS. The only way a researcher's contribution to knowledge can be known is by sharing research findings. Ghazali *et al.* (2016) stressed that sharing research results has always been an integral part of academic life and also a major parameter in the research life cycle. National Institute of Health Research (2019) defines the dissemination of research findings as a process of transmitting research findings to a targeted audience who can maximise the benefits of the research within a short period. Research undertaken is irrelevant if it does not get to the people who need to use it. According to the University of South Australia (2020) dissemination of research findings is an integral part of the research life cycle. It involves passing on the benefits of research findings to other researchers, professional practitioners and the wider community. The University maintained that research activities funded by public funds are rarely considered complete if the results are not widely disseminated.

Research findings in any field can only have a significant impact if they are available to people who require them. Ngulube (2007) emphasised that many LIS researchers in Africa are not exposed to existing knowledge available in their field because research emanating from that field is not easily available. This is because most Nigerian scholars are forced to publish to the wrong users due to limited channels for the dissemination of research results. The researcher warned that there is a danger if researchers continue to repeat the same research over and over again without further innovative input. Gichygu (2018) also found out that most LIS research is mostly published in local journals which resulted in poor visibility internationally.

Edward (2015) opined that several media can be utilized in the dissemination of research findings such as publication in peer-reviewed journals, presentations at professional meetings, oral presentations or poster presentations. The author believes that scholars should use conference and poster presentations for they offer researchers the opportunity to disseminate their findings quickly and to obtain feedback and interact with a targeted audience. Tripathy *et al.* (2017) advocated that scholars should utilize various channels in disseminating their research results to improve their visibility, and disseminate to policymakers, funding agencies and targeted audiences. Researchers need to make their research findings visible to build partnership networks, present findings at conferences and to create awareness (National Institute of Health Research, 2019).

Similarly, University of South Australia (2020) opined that research findings can also be made available to targeted users through refereed outlets (journals, books, conference proceedings, posters) and non-refereed outlets such as presentations in conferences, public performances and public exhibitions. Although publications in Journals, books, conference proceedings and posters are the major outlet for the dissemination of research findings several intended users have no access to them. This is because libraries are the major organisations that subscribe to these channels and an individual researcher cannot acquire all the various information resources scattered all over the world on his/her own.

A responsive researcher should bear in mind that dissemination of research findings to a wider audience is just as important as conducting the research itself. Connaway and Powell (2004) itemised several shortcomings in the dissemination of research findings in the field of LIS. These include: researchers do not disseminate their research results adequately, users do not keep themselves abreast with research reports, the library

profession has been too content with non-research reports, the audiences for printed reports are few, and the impact of reported research has been weakened due to poor bibliographic control and inadequate access.

Measurement of impact is another research activity undertaken by LIS educators. According to Roemer and Borchard (2012), the idea of tracking the impact of research was initiated by Eugene Garfield in 1955. Australian Research Council (2022) defines research impact as the contribution that research findings make to society in terms of economy, culture, national security, public policy, and services. Research impact is what society gets back when research is completed. Salami *et al.* (2020) maintained that it is not just enough for a researcher to undergo research and publish its findings, it is equally important to monitor the impact of such findings on stakeholders. Several traditional indices can be utilised in measuring the impact of research such as citation counts, H-index and journal impact factor developed by ISI, Web of Science; and Scopus and other internationally recognised indexing bodies (Ezema and Ugwu, 2017). The traditional methods of measuring research impact are referred to as Bibliometrics.

Equally, Jolla (2021) defines bibliometrics as metrics that are based on how research works are cited by other researchers and they are mostly associated with journal articles, books and conference proceedings. Kramer and Bosman (2016) stressed that a peer review process is also a tool that can be used to measure the impact of research, for it ensures that research outputs meet certain standards to enable credibility and reliability. Aragon (2013) criticised the traditional indices for measuring the impact of research for their inability to compare research from different fields and add no major information on the research productivity of researchers. The author further stated that traditional indices

in measuring research impact can also be affected by factors such as the location of the author, the prestige of the author, language, and availability of the publishing journal.

In the same vein, Ezema and Onyancha (2016) stated that even though traditional metrics such as citation counts are globally accepted as one of the indices for research evaluation, the accuracy of these bibliometric indicators are been questioned because of the time lag for accumulation of citation. Furthermore, Greenhalgh and Glover (2015) suggested that the impact of research should not only be measured by the contribution the findings make to a researcher's peers but also to industries, government, and the general public Bormann (2014) opined that in measuring research impact two tools should be utilised, productivity and one that measures impact. Ezema and Ugwu (2017) advocated for other assessment metrics to determine the research and societal impacts of research findings.

In recent times, there are alternative tools for measuring research impact which complement the traditional methods. These tools are referred to as alternative metrics or altmetrics. According to Jolla (2021), Altmetrics is a tool that provides data for various types of research outputs such as journal articles, books, /book chapters, software, datasets, videos and working papers that are not well covered by traditional metrics. They provide information or metrics on a particular work as soon as the research work is available online.

Although bibliometrics and altimetrics have provided forums for researchers to monitor the impact of their research, both methods have been heavily criticised by some scholars. Jolla (2021) enumerated some shortcomings of both traditional metrics and alternative metrics to include: some of the numbers allocated to research work does not reveal to the researcher how the work was cited, some attention gained by works may be positive or

negative, metrics can be misused, metrics can be biased, some type of research output and some disciplines can get more attention, and metrics can also be gamed. For instance, some publishers and editors may try to boost their impact factor to attract more traffic. It must be emphasized that bibliometrics and almetrics complement each other. Altmetrics provide immediate information on stakeholders' engagement in a research work while bibliometrics provides metrics on the number of citations of works that have been published and indexed.

2.5 Social Media

Social media is one of the new developments in the digital world. The term social media was coined from America online (AOL) in the early 1990s. During that period, the company developed the Instant Messenger feature; this feature enabled registered users to communicate in real-time (Bencovisi, 2010). Kwanya and Stillwell (2015) opined that social media represent a major shift in communication, as it flattens the world and brings people together around the world to be friends, interact or transact. Social media focuses on building relationships and interactions. Oladokun (2015) explained that social media is a very dynamic aspect of mass media that has not only grown in popularity but has also become mainstream and has made the world a global village. The strength of social media lies in the fact that social conversation is one of the most powerful communications in the 21st century.

There are various definitions of social media. Safko (2010) defines social media as ways humans use emerging technologies to effectively reach out and connect to other human beings, create a relationship, build trust and be there for each other. Kaplan and Haelein (2010) define social media as a group of Internet-based applications that allow the

creation and exchange of user-generated content. Custis (2013) describes social media as internet sites where people interact freely, sharing and discussing information about each other and their lives, using a multimedia mix of personal words, pictures, videos and, audio. Social media allows participants to connect, create, comment, view, share, rate, discover, create profiles, and exchange user-generated content. Social media can simply be seen as internet-based and mobile applications that allow users from all spheres of life, to interact, connect and collaborate.

Social media exhibit certain characteristics. According to Kaplan and Haelein (2010), the characteristics of social media include the provision of almost unlimited space to share content users create, share or evaluate all or most of the content, anchoring on social interactions, linking of content with other external media and, interlinking of users to each other. Kapoor *et al*. (2018) also supported this fact by stating that most social media platforms encourage feedback and contributions from all participants, and are open to feedback and participation through voting, commenting, or sharing of content, facilitate conversation, allow communities to form quickly and communicate effectively, as well as thrive on their connectedness and making use of links, resources and people.

Equally, Saxana and Yadav (2013) stated that social media provides free web space for the community members to create content, give the users unique identities, by which they become known online, enable the users to build profiles that are to connect them to other users having similar interests, encourage the users to post both personal and professional information onto the platforms, enable conversations by giving the users the right and tools to comment on posts by other members and time-stamp all posts to make them easy to follow. Similarly, Diaz- Campo et al. (2019) categorised social media into two groups:

generic social media such as Facebook, Twitter, and YouTube. The second category of social media is academic social media. Examples of academic social media are Academia.edu, Research gate, Mendeley, Google Scholar, Pinterest, and Impact story.

2.6 Academic Social Media

As indicated, a variant of social media network that has recently been introduced is Academic Social Media (ASM) that offers similar services as that of the traditional social media; however, they are intentionally aimed to cater to the needs of the academic community. Tai and Pieterse (2017) stated that professional networks that enhance information sharing and provide communication tools for professional purposes have arisen alongside the general social networks. These platforms target the academic community and satisfy their scholarly needs especially in the area of research (Sheikh, 2016). Ali and Richardson (2017) stated that the ASM sites served as vehicle for scholars to promote their research and communicate with various scholars in their field.

There are various definitions of ASM. Sheikh (2016) defines ASM as platforms that target the academic community and fulfill their scholarly needs. Bullinger *et al*. (2010) also identified ASM as sites that offer a combination of tools and capacities to support research activities, communication, collaboration, and networking. Vanquez and Bastidas (2015) viewed ASM as a new way for researchers to become more visible to their colleagues. According to Ovadia (2014), ASM are the specific networks that are associated with academic activities. The networks allow users to share their papers, data sets, post questions, to the community and members of the group can see and respond to the questions. ASM could therefore be defined as networks that provide tools and

techniques to undertake research and disseminate research findings to a large audience in a network environment.

There are various ASM platforms or tools that a researcher can employ in enhancing his/her research activities. One of these, according to Tai and Pieterse (2017) is Academia.edu which was established in September 2008 by Richard Price in San Francisco. It is a part of the open science movement. Richard Price, after he completed his PhD, decided to create a homepage on the internet where he could promote his resume especially on the research projects he has done. Richard felt that there should be one click method of uploading ones' articles by creating a homepage (Academia.edu, 2022).

Academic.edu is a network site that is specifically for academics. It allows users to upload their publications and share them with other scholars. Users can follow other researchers and receive notifications about their papers and other research updates (Nadex and Borrego 2013). Tai and Pieterse (2017) stated that the network is specific to researchers affiliated with academic institutes and specialised in academic activities such as sharing studies, articles, and information. It also provides tools that allow users to track their publications to see how often they are cited and ease information exchange. It also allows users to post queries to the community and organize researchers by their institutional affiliation. Academia.edu also has an alert service that notifies users by sending an e-mail to them whenever a researcher whom they are following publishes a new study, allows readers to tag articles, and alerts anyone who is following a certain topic (Niyazov *et al.,* 2016).

According to LibGuides (2016), Academia.edu has a strong profile and curriculum vitae feature that researchers can explore to showcase their achievements and expertise. It also has a feature for measures of impact count such as profile view, document downloads, unique visitors, external links to documents, the geographic distribution of visitors, and referrals. Asmin and Morgan (2015) opined that Academia.edu has an interface with Facebook and Google so a researcher can connect through these platforms. Palmer and Strickland (2017) opined that Academia.edu also has services that send users an email whenever a researcher they are following publishes a new article, allows users to tag articles and it also alerts users who are following specific topics. Niyazov *et al.* (2016) in their studies found out that those publications in which alerts were sent had an increase of 41% citation count.

Another type of ASM is ResearchGate. ResearchGate was also established in 2008 by Ijad Madisch, Horst Fickenscher, and Soren Hofinayer in Berlin. (Asmin and Morgan, 2015). According to ResearchGate (2022), the platform was established to address the problems in the way researches were conducted and shared. The mission of the platform is to connect researchers all over the world and make research open to all stakeholders. It is also specific to researchers affiliated with academic institutions. (Tai and Pieterse, 2017). Asmin and Morgan (2015) stressed that the main purpose of establishing it was to connect researchers all over the world and allow them to share and access research output, knowledge, expertise and communicate continuously based on the open-world concept and eliminate distance as an important factor in working relations. Another reason why ResearchGate was established is to create access to studies even before they are completed. This is for peer review and the exchange of ideas (Ovadia, 2014).

Tai and Pieterse (2017) observed that Research Gate maintains an index which is known as the Research Gate Score. The Research Gate index is based on the user's contribution to content, profile details, and participation in interaction on the site, such as asking questions and offering answers. LibGuides (2016) stressed that the metrics available in Research Gate relate to the following: Publication count by type of articles, conference paper, publication views by country and by institution, Full-Text downloads, dataset downloads, full-text requests, open reviews, citations and impact points, Member profile views by country and by institutions, questions asked, questions answered, number of followers, and research gate score. Similarly, Palmer and Strickland (2017) emphasised that Research Gate is a useful tool for locating conferences, workshop and seminar papers especially materials such as posters and slide presentations that are not available in other databases. Research Gate also provides an opportunity for users to create project logs that can be used to create awareness among fellow members on current research and attract potential co-authors.

Mendeley is another platform of ASM. It is a free web-based tool for organizing research citations. It integrates the management of the research articles with a feature for collaborating with researchers locally and worldwide. Services in Mendeley include citation management, synchronization and collaboration, PDF management and annotation, and integration with word processing software. (Jamali *et al.,* 2015). Ovadia (2014) describes Mendeley as a tool that enables researchers globally to share professional contacts and disseminate research activities. It also allows users to save their favorite articles, organize bibliographic materials and share research outputs with other researchers (Surgimoto *et al.,* 2016). Jeng *et al.* (2015) stated that Mendeley also

provides an opportunity for users to start groups. There are two types of groups in Mendeley private groups and public groups. Members of the private group are only visible to the members of the group while the public group is visible to everyone in the platform.

Methodspace is also a category of ASM that contributes to enhancing research activities. According to Methodspace (2018), it is an ASM site that uploads posts, used for resource listings and it is also an interactive community. The site allows anyone to view its content but only registered members can contribute articles to the site. According to Salmons (2022), stressed that Methospace is a platform funded by SAGE publishing. It is a multidisciplinary site that was created to make available open access resources such as methods for designing, conducting and analysing research data. Similarly, Newcastle University Library (2014) views method space as a multidimensional online network for researchers engaged in research methods. Research Information Network (2009) asserted that Methodspace also provides services that bring together researchers from different fields to advise and discuss various aspects of methodology. Members also have an opportunity in the forum to find out about upcoming conferences and educational events and also discover new resources such as free book chapters.

Linkedin is also an ASM platform that brings academics, technocrats, and professionals together. Each member creates a profile that provides an avenue for other users to access his/her professional and academic accomplishments (Pauley, 2014). According to Gregersen (2022), Linkedin was founded in the year 2002 and its headquarters is situated at Mountain View, California. Oladokun (2015) also noted that LinkedIn enhances research activities by providing an avenue for researchers to showcase their skills,

knowledge, experience, build and maintain a broader network of professionals, find and reconnect with colleagues and classmates, learn about other institutions and discover new opportunities for collaboration, joint working, research and partnership. Gregersen (2022) maintained that a connection is created among users when one accepts an invitation from a fellow user to join his/her network. Linkedin can also be utilised to manage a user's online presence and promote and share one's contribution to knowledge (Ovadia, 2014). This view was also supported by Morcom (2020) who stated that users can use Linkedin to share their research with a targeted audience. This can be done by attaching links to one's research to his/her Linkedin profile. This will not only bring an increase in readership to an important work but also promote a researcher's specific expertise.

Google Scholar is also an ASM that can be utilised to enhance research activities. According to Levy (2014), the key originator of Google Scholar is Amuray Acharya in the year 2004. He began the project in his college years at the Khanagpur Campus of Indian Institute of Technology. He observed that college students in India were finding it difficult to access relevant scholarly materials. Palmer and Strickland (2017) stated that with Google Scholar users can create a profile and upload their research findings. Google Scholar also provides a search engine that can be used to identify and access published articles. Articles uploaded on ResearchGate and Academia.edu and other databases can be linked to Google Scholar accounts so that readers can have access to it. According to D. Samuel Gottesman Library (2020), for authors to get the most out of their citation analysis they must create a Google Scholar account profile. Google Scholar assists researchers to keep track of citations to their publications. Google Scholar also helps

users who have created Google Scholar profiles to find their publications all over the globe and include them in their list of publications in their accounts.

Open Researcher and Contributor Identity (ORCID) is another vital ASM platform that can be utilised to enhance research activities. According to Aalborg University Library (2021), ORCID is a platform that was established by a global community that includes research organizations, publishers, funding agencies, and other stakeholders in the research system. Shilum *et al.* (2021) noted that ORCID distinguishes a researcher from other researchers across the globe. The ORCID platform generates an identification number that can be utilised for an application for grants, publication and peer review.

Impact Story was founded in 2011 by Heather Prowowar and Jason Priem (Impact Story, 2022). The platform provides opportunity for researchers to explore and share the impact of their research to readers. Impact Story is another ASM that can be utilised by researchers in enhancing their research activities. Sharman (2018) maintained that Impact story allocates numbers for all papers uploaded by researchers to their sites. It also indicates the number of people who have downloaded and tweeted about the paper.

2.7 Use of Academic Social Media

LIS educators should not only strive to engage in rigorous research activities they should also engage in research activities that in the end will provoke further reading, more reads, sharing, discussion, investigation, and use by several stakeholders in the society. This is possible when LIS educators leave their comfort zones and utilize various technologies like ASM in enhancing their research activities as the impact of ASM in enhancing research activities cannot be overstated.

ASM profile enables a researcher to improve his exposure, visibility, connection with other researchers, and improves a researcher's reputation (Tai and Pieterse (2017). This was also the view of Jeng *et al.* (2015) who stated that ASM provides a place for researchers to establish a personal profile, provides a medium to connect with other users, provides the ability to monitor the activities of those who appear on the list online and offers opportunities to establish new connections. Kelly (2013) articulated that a typical ASM contains a brief profile together with the papers of a given researcher. Similarly, Bullinger *et al.* (2010) maintained that researchers are using academic social media to showcase their expertise and achievements through registering multiple online profiles.

As researchers, LIS educators are expected to seize the opportunity provided by various ASM by depositing their resumes in the form of creating profiles on various ASM platforms. ASM platforms also provide a medium for researchers to gather information for their research. The platforms have increased the possibilities of how researchers receive information in enhancing their research. Ward *et al.* (2015) opined that ASM performs literature-related functions such as searching for academic literature, tracking relevant articles to read; accessing to publication lists and database entries of members and bibliographies; accessing open-access archives; various attention direction services like notifications, "Have read" buttons, commenting or rating, "share this" function, among others.

Tai and Pieterse (2017) observed that in enhancing the literature search of researchers, some ASM platforms such as Academia.edu send email alerts to interested users whenever a new article in their area of interest is published. The author further stated that two mechanisms exist for this purpose. The mechanisms are active and passive. In

the active mechanism, members of the network choose to follow researchers of their acquaintances or those whose research outputs are of interest to them. While in the passive mechanism the site itself proposes new articles for the user to follow, either by authors associated with the user's area of interest or those who belong to a cycle of direct contact for example, shared institution or department.

Ward *et al.* (2015) stressed that the following information-gathering activities take place in various academic social media platforms: members can find other users with similar interests, hold discussion, do collaboration, participate in discussion forums, upload files, engage in collaborative writing and use the tools to administer participants in an event. Boughanem (2013) stated that ASM provides a huge number of meaningful data and metadata that can be utilised as proof of evidence in several tasks related to information gathering when undertaking research. The author further stated that the information generated by social media users has several properties such as diversity, vast coverage, and popularity that can be used in sourcing for data during the information search process.

In the same vein, Kelly (2013) and the French National Institute for Agricultural Research (2014) articulated that the key area in which ASM can benefit researchers is that they provide opportunity for researchers to search and meet new collaborators which might include potential partners and co-authors. In the same direction, Barnes (2017) observed that academic social media helps a researcher to find grant opportunities for his/her work. To disseminate research findings beyond a small cycle of scholars is now a condition of most research grants.

In the same vein, Salami, *et al.* (2020) also opined that ASM provide an opportunity for researchers to be informed on upcoming conferences, seminars, and workshops in their fields. For example, academia.edu alerts its members of funding opportunities and upcoming conferences, seminars, and workshops available in various fields. Kapoor *et al.* (2018) also reported that ASM provides an opportunity for researchers to collate, analyse and synthesize previous findings from existing works available on various ASM platforms before they embark on a new research project. In addition, several ASM can be used to generate data.

Lupton (2014) maintained that ASM platforms could be utilised by researchers to invite interested academics to complete a survey. In this direction, Bright *et al.* (2014) opined that ASM can serve as a social research tool for soliciting public comments on different issues. Din *et al*. (2012) maintained that users can collect information from social media platforms as a result of their features that can offer users the opportunity to search, store, retrieve and update information. The information obtains from ASM may be for knowledge acquisition.

Collaboration is another research activity that can be enhanced through the utilisation of ASM platforms by LIS educators (Tai and Pieterse, 2017). Research activities have become networked and collaborative in recent times; it has been argued that one-person research has virtually disappeared. ASM provides opportunities for cross-border and cross-disciplinary research activities. Ffloulkes and Vare (2018) emphasised that ASM boost the collaborative activities of a researcher within a chosen field by creating opportunities for greater interaction and collaboration with other experts in the field on a

global scale, and provides an opportunity for a researcher to benefit from the expertise of other researchers.

Collaborative activities can provide a sounding board for one's ideas before, during, or after the research process. Ali and Richardson (2017) stressed that as a result of utilisation of academic social media by researchers, geographical barriers have been reduced among them. Today, every researcher can interact, communicate and collaborate to conduct research regardless of their geographical location through interaction, exchange of ideas, and critique. Nordling (2011) noted that social media has the potential to dramatically reduce the need for developing countries' researchers to travel to meetings and conferences. It provides a forum for researchers to meet online to work together and share ideas on common interests.

ASM enhance research collaborative activities by improving the quality of research carried out by LIS educators. This is in line with Onifade *et al.* (2015) who posited that social media promotes research collaboration for it enables researchers to obtain up-to-date information from fellow researchers through an exchange of knowledge which results in an improvement of research output. Social media provides avenues for researchers to have access to expertise, access to unavailable equipment or resources, access to funding opportunities, showcase expertise, increase research visibility, and acquire knowledge to undertake large or complex research problems, (Andrade *et al.*, 2009).

Sampalo and Zicker (2016) opined that ASM have provided opportunities for researchers to become members of teams by bringing together complementary skills and multidisciplinary approaches to achieving common goals. The authors also emphasised

that ASM enables researchers to share ideas and resources, which ultimately reduce the cost of conducting research and increase the quality of research. Kwanya and Stillwell (2015) maintained that the focus of ASM is interaction and developing a relationship through unrestricted conversations. The authors further stated that the mission of ASM has been very successful because the social conversation is one of the most powerful aspects of communication in this generation. The power of ASM does not originate from what each of the participants does individually but from what they do collectively.

The impact of ASM on the dissemination of research findings cannot be overemphasised. In the past, the dissemination of research results was mainly through print publication channels such as publishing in journals, conference proceedings, and books. These channels are sometimes slow and are not interactive. However, such channels are now just a part of scientific research dissemination. (Conduct Research, 2020) World Health Organisation (2020) argued that the big limitation of relying only on disseminating research results in channels such as journals, conference proceedings and books is that most key stakeholders tend not to read them. Users may not read them because of a lack of accessibility to them as a result of the information explosion. The organisation also stressed that the internet age has enabled researchers to share their contributions to knowledge instantly and stakeholders can access information quicker and easier than ever before.

The internet has also provided an opportunity for researchers to share their work not only with their immediate community but also with the world. This view was corroborated by Klar *et al*. (2020) who stressed that academic social media provides scholars with the most direct route to sharing their research findings. Researchers do no longer wait for

stakeholders who are interested in ongoing research to search for publications rather scholars transmit research results more directly to potential stakeholders. This has resulted in direct communication between researchers and the audience.

ASM have provided opportunities for researchers to publish and highlight major achievements. Ward *et al.* (2015) opined that ASM platforms such as Google scholar, Microsoft academic crawls the entire web including research-related pages. They have also helped to expedite research outputs all over the world by providing fast, free and open access to research results. Kelly (2013) noted that ASM increases the chances of papers being downloaded.

Barnes (2017) emphasised that it is important that research findings are disseminated to the audiences the research work is intended to influence. Ecklund *et al.* (2012) emphasized this by stating that The National Science Foundation in the United State of America and all research councils in the United Kingdom require grant applicants to provide a dissemination plan that includes how research results will be communicated to non-academic groups for example policymakers and potential research beneficiaries. It is also worth mentioning that when researchers disseminate their research findings, they are also at the same time managing their researchers. Bullinger *et al*. (2010) supported this point by stating that academic social media serve as an information management system. It helps to manage a large amount of information, references, literature, and documents researchers compile. ASM can also be employed in sharing links to published articles with the intended audience.

Furthermore, Molett *et al*. (2017) maintained that most researchers find it very frustrating when they come across fascinating research findings in an ASM platform only to

discover that they cannot have access to the work because it is closed access. The writer advised that in such situations researchers can share data of the particular research with/her intended audience. ASM also provides an opportunity for researchers to upload their working papers. Sharman (2018) opined that when researchers upload their manuscript it helps to build up interest when the paper is eventually published. The writer also maintained that the uploaded manuscripts can be commented on by fellow researchers, such comments can be used to improve the paper before final publication.

ASM sites serve as medium for scholars to promote their research and communicate with various scholars in their field. According to Ali and Richardson (2017), a typical academic social medium consists of a set of papers, and a set of users associated with the papers, each paper is described by a list of metadata which includes: title, abstract, authors, and conference or journals in which the paper has been published. Information about each user with respect to his research interest and biographic information is also available.

Furthermore, Surgimoto *et a*l. (2016) stated that research outputs such as datasets, software code, figures, presentation slides, and videos can be shared on various academic social media platforms. Users can comment on their favorites, like, and re-use them. Traditionally, LIS educators in Nigeria disseminate their research findings in publications such as journals, book production, and conference papers. These publications are mainly accessed in various libraries and databases.Several stakeholders and policymakers do not have access to such research findings. (Salami, *et al.*, 2020).

Justin and Rehema (2012) advocated that in Africa where access to research outputs generated in universities and research organizations is a challenge, ASM has the potential

to enhance the search for, distribution, and sharing of research results. Consequently, ASM such as Google Scholar, Research Gate, Mendeley, and Academia.edu are complementing these various methods of research dissemination since it makes it faster and possible for LIS educators to communicate results directly to the public and other key stakeholders.

Research has shown that most lecturers in universities in Nigeria do not share their research findings on ASM platforms. Onwujekwe (2016) stated that the best university in Africa in terms of research was the University of Cape Town, with a Research gate score of 2950587 while the best university in Nigeria was the University of Ibadan with a Research gate score of 8236.03. Regardless, of the ASM platform utilised by LIS educators the advantage of sharing one's work is that it spreads easily to every part of the world, it provides opportunities for researchers to publicise their expertise and achievement which may lead to several opportunities such as invitation speaking at conferences and an invitation to review articles.

Measurement of Impact is another research activity that can be enhanced by the utilisation of ASM by a researcher. Nicholas *et al.* (2016) pointed out that various ASM have developed their methods and metrics for users to monitor their research impact and reputation. The authors further maintained that ASM such as Academia.edu has been heavily criticised for overemphasising on monitoring of research impact by researchers. Thelwall (2020) maintained that many individuals and organisations assess the impact of research to support decisions, planning, appointment, promotion, and research allocation.

Ravenscroft *et al.* (2017) noted that traditional metrics such as the H-index and g-index measure impact based mainly on citation of scientific work while academic social media

have provided new cues to assess the academic impact of scholars. It allows users to tag, annotate, bookmark, and rate scientific literature. Elsevier (2020) opined that impact measurement allows a researcher to see how his/her work is being used by the research community. For it provides information on readership data within few days of dissemination. It also enables an author to find out if one's publication is being shared, cited, and mentioned.

Measuring research impacts through ASM is now on the increase in the scientific world because it captures both the volume and quality of research work. According to University of Pittsburgh Library (2020), ASM platforms measure research impact through Altmetrics tools which stand for alternative metrics. Altmetrics complements other traditional metrics of impact measurement such as citation counts, impact factor, and author H-index. Altmetrics give a clearer picture of how research findings are used. Measuring the impact of research through Altmetrics deals with the creation, evaluation, and use of scholarly metrics obtained from the social web to evaluate the research impact (Haustein *et al.,* 2015). Altmetrics provide answers to the following questions: how many times was a research work downloaded, who is reading the work, how are other researchers commenting on it, and which countries are looking at the research.

Similarly, Thelwall (2020) pointed out that Altmetrics provide early statistics on impact evidence which help to shorten the time between conducting research and being able to evaluate the impact. Altmetrics reflect the impact that is wider and different than other traditional impact measurements as it covers wider research outputs which are not measured by traditional metrics. Such research outputs include video, software, and grey literature, and it is also used to evaluate research outputs that are not published through

journal articles, and used to identify novel types of research impact during institutional evaluation or other self-evaluation. Nuzzolese *et al.* (2018) stated that the sources used in measuring research impacts in various ASM platforms include mentions, citations, and readers' counts.

Several ASM platforms have interfaces that provide users access to large data. Haustein *et al*. (2015) opined that ASM platforms have access to large-scale data as a result of Application Programming Interfaces (API). According to Jolla (2021), there are several advantages of utilising alternative metrics. Such advantages include: altmetrics accumulates more data concerning a research work compared to traditional metrics, altmetrics can be gathered from various types of research output and altmetrics provide information on the attention a particular research work is getting outside the academic world where people may use it but not necessarily cite it. Regan and Henchion (2019) pointed out that despite the advantages of altmetrics there are still some perceived threats such as it is time-consuming to collect, incomplete and biased coverage of some impact areas, incomplete coverage of impact type, and lack of quality control. Despite these limitations of impact measurement through ASM platforms, it can provide an avenue for LIS educators to know the level of interest in their recently published articles.

Several ASM provide forums for researchers to measure or track their research impacts. Roemer and Borchard (2012) opined that the following ASM platforms provide forums for researchers to track their scholarly impact. (1) Impact story: Impact story support measurement of research impact through the aggregation of online metrics. The research items are subsequently assigned impact categories such as general, highly, saved, cited, recommended, and discussed. (2) Mendeley: The platform provides a forum for

researchers who have created profiles to view downloads of their research items through the portal. (3) Google Scholar: The forum calculates and tracks citation data. (4) Academia.edu: The platform calculates metrics such as the number of views of a work and country-based page traffic.

In a nutshell, ASM platforms can be used to examine the impact of a research item in the social world. They can be applied to any type of research output such as journal articles, books, chapters in a book, conference proceedings, seminar papers, software, datasets, work of arts, and videos.

2.8 Library and Information Science (LIS) Educators

LIS is an interdisciplinary discipline that studies the acquisition and dissemination of information and knowledge. According to Omehia (2019), LIS education as a discipline concerns itself with the creation, management, and use of information in all formats. LIS education is usually offered in colleges of education and universities at both undergraduate and postgraduate levels and they are also a subject of research in both the Industry and academic world (Librarianship Studies and Information Technology, 2020) Omehia (2019) pointed out that LIS education provides specialized formal training for potential librarians and para-professional librarians giving them necessary skills and competency for the provision of effective and efficient library services and transfer of knowledge.

There are various definitions of LIS educators. Abubakar and Farouk (2016) defined LIS educators as experts that teach and continuously contribute to the development of the LIS programme. Adetimirin (2016) stated that the role of LIS educators as lecturers is to

teach, by transferring knowledge, conducting research, and carrying out community service which includes administrative duties. Ejedafiru and Oghemetega (2014) highlighted the roles library and information science educators are to play in training potential Librarians. The roles include; preparing LIS graduates for leadership and management roles, providing LIS students access to current information, providing LIS students with the opportunity to be able to meet other students in a virtual space, and educating LIS students on how to engage fellow learners and practitioners globally. Onyenachi and Onyekwereodiri (2016) stressed that library and information science educators should ensure they produce graduates that can compete favourably in the global market. Several emerging technologies have affected the service delivery and operations of the library. Omehia (2019) observed that dissemination of information has been replaced with communication, repository replaced by databases, literature by the acquisition of knowledge, and search is now replaced by navigation.

LIS education in Nigeria is faced with several challenges. Olakunle (2014) opined that there is displeasure about the inadequacy to meet organisational and societal information needs. These shortcomings in LIS education are the result of globalisation, rapid technological development, changes in organisational patterns and changing nature of work and occupation. As a result of these changes in the field of librarianship, Omehia (2019) stated that library and information science educators need to reevaluate how they train library and information science students with the necessary skills and competencies to man various types of library and information centres.

Abdulrazaq and Ladi (2012) pointed out that despite these global changes the teaching, learning, and research activities of library and information science educators in Nigeria

have not witnessed much growth. They also maintained that LIS education may continue to be stagnant, if necessary steps are not taken by stakeholders. This view was supported by Ejedafiru and Oghemetega (2014) who maintained that most LIS graduates in Nigeria are continuously faced with challenges of poor service delivery strategies, poor librarianship practices, and the problem of skill and competency gap. Issa *et al.* (2016) opined that the current trend in the training for librarianship calls for closer scrutiny of the basic constituents of quality library education. It is necessary that LIS educators provide quality LIS education in various Nigerian university library schools.

It can be inferred from the foregoing that LIS education is facing various challenges as a result of advancements in Information and Communication Technology. Babalola *et al.* (2018) advocated that LIS educators should conduct research activities to be productive and proffer solutions to the problems in the field of LIS. The authors further stated that the extent of research activities undertaken by LIS educators depends on the quality and relevance of information resources at their fingertips as well as their ability to search, retrieve, evaluate, use and effectively communicate information through the use of electronic and digital technologies. Imeida *et al*. (2016) noted that technology has provided a new way of how teaching and research are conducted by library and information science educators globally. Despite the relevance of undergoing vital research activities, it has been observed that LIS educators do not undergo vigorous research activities. Malekabadizadeh *et al*. (2009) opined that in most LIS research, little attention is paid to adapting or adopting theories. Creative thinking is not encouraged and training programs did not often lead to rigorous research activities.

2.9 Theoretical Framework

The study is anchored on the Diffusion of Innovation Theory, Technology Acceptance Theory, Uses and Gratification Theory, and Unified Theory of Adoption and Use of Technology.

2.9.1 Diffusion of innovation theory by Everett Rogers (1962)

Diffusion of Innovation (DOI) theory was developed by Everett Rogers, in 1962. Rogers carried out a research during his PhD programme analysing the diffusion of agricultural innovations in Lowa (Agricfuture, 2022). The theory explains how over time, a new technology gains force and spreads through a specific group of people. According to Singer (2022) maintained that a new concept, service or product is not immediately accepted by users simultaneously. It takes a process whereby some people quickly adopt to a new innovation compared to other people.

In the same vein, Rogers (2003) found out that there were various categories of adaptors of innovations. The categories of adaptors include the following: (1) Innovators: The innovators are made up of 2.5% of the social structure population. These set of people are quick to adapt to new innovations, ideas and knowledge. They are able to handle failures and risks and they play vital roles when any innovation is introduced into the system. (2) Early adopters: They consist of 13.5% of the social system population. They are influential members of the social system and provide information and advice to people about new innovations (3) early majority: The early majority represents 34% of the social system population. They want to see evidence and be convinced before they utilise a new innovation. (4) Late majority: They comprises of 34% of the social system population. They are skeptical and cautious about new innovations. These set of people can only

accept a new innovation due to peer pressure or economy necessity. (5) Laggard: They are made up of 16% of the social system. They are bound by their culture and tradition and are very conservative and take time to adapt to a new innovation or idea.

According to Rogers (2003) the DOI theory has four elements: (1) 'Innovation: Is an idea, perceived as new by an individual, group or organisation (Rogers, 2003:12). (2) Communication: The process by which participants create and share information to one another to reach a mutual understanding (Rogers, 2003:18). (3) Time: The time involved in the innovation decision process, the time taken by the adopter and adoption rate across the social system (Rogers, 2003:20) (4) Social system: They are set of systems such as individuals, informal groups and organisations (Rogers, 2003:23).

The diffusion of innovation theory is presented in Figure 2.2.

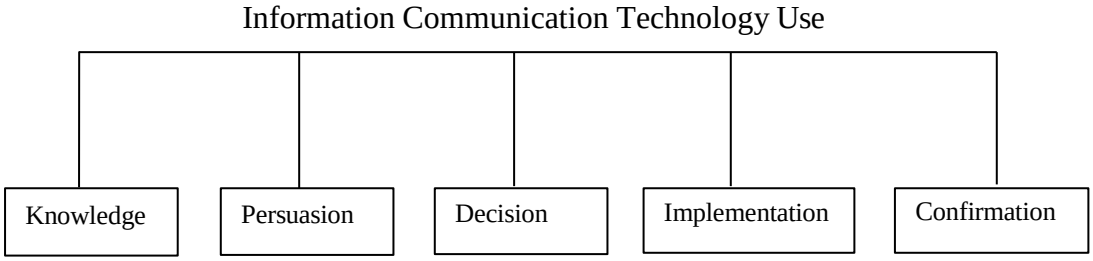

Figure 2.2: Diffusion of Innovation Theory Model (Rogers, 2003)

Figure 2.2 presents the model of DOI Theory. Rogers (2003) opined that there are five stages in the diffusion of innovation theory. The stages include (1) the knowledge stage: During this stage, individual gains knowledge by seeking information about the innovation. (2) The persuasion stage: The persuasion stage occurs when the individual has a negative or positive attitude towards the innovation. The formulation of a favourable or unfavourable attitude towards a new technology might not lead directly or indirectly to adoption or rejection. (3) The decision stage: At the decision stage, the

individual chooses either to adopt or reject the technology. Rejection can be active or passive. In the active stage, an individual tries a technology and ponders about adopting it. In the passive stage, an individual rejects adopting an innovation without trying it. (4) The implementation stage: In the implementation stage, innovation is adopted by putting it into practice. (5) The confirmation stage: In the confirmation stage, the individual has already decided to adopt the technology but the individual looks for further confirmation for his/her decision.

According to Singer (2022) there are five main factors that influence the adoption of a new innovation. The factors are: (1) Relative advantage: People will adopt a new product, service and idea if they perceive that it is better than the one it wishes to replace. In the context of ASM LIS educators may likely use ASM platforms if they perceive that it will enhance their research activities better than the traditional method such as dissemination of research findings only on print medium which is slow in reaching to stakeholders. (2) Compatibility: Users will utilise a new product, idea or services if it is consistent and can add value to their needs. LIS educators may utilise ASM if they believe that it will enhance their research activities.

The third factor that influences the adoption of a new innovation according to Singer (2022) is the complexity of the innovation. Users may utilise an innovation if it is easy to understand and use. LIS educators may use ASM if it is user friendly. Fourthly, triability is another factor that influences the use of an innovation. Users may use an innovation, if it has been experimented. Observability is the fifth factor that influences the use of a new product. People may use a product if they observed that the product can provide concrete

results. In the context of ASM LIS educators may use ASM if they discovered that its use can positively improve their research activities.

This theory relates to the present work because the theory is appropriate for investigating the adoption of ASM by LIS educators in universities in Nigeria due to the following reasons: (1) Knowledge stage: To effectively utilise ASM for enhancing research activities LIS educators must be familiar with the necessary knowledge on how to effectively use ASM tools. (2) The persuasion stage: LIS educators might have either positive or negative perceptions of the use of ASM. (3) In the decision stage LIS educators decide whether to adopt or reject ASM in enhancing their research activities. (4) During the implementation stage, LIS educators are expected to adopt ASM for enhancing its research activities. (4) Finally, at the confirmation stage, LIS educators may need reconfirmation from colleagues on the decision they have made to adopt ASM technology.

2.9.2 Technology acceptance model (TAM) by Fred Davis (1989)

The technology acceptance model (TAM) was formulated by Fred Davis, in the year 1989. It is a theory that tries to understand the reasons for the adoption and use of new technology by individuals, particularly in the workplace organisation. Davis conducted various researches to determine the relationship between two independent variables such as perceived ease of use (attitude and behavioral intention), perceived usefulness and system usage as the dependent variable. The results of the research found out that there was significant relationship between perceived ease of use, perceived usefulness and system usage.

Similarly, Olushola and Abiola (2017) noted that TAM observes that users may be willing to utilise a technology if they find it useful and easy to use. They maintained that the TAM has two concepts: perceived ease of use and perceived usefulness. The two constructs determine users' attitude towards the adoption of a technology. These concepts can also influence the behavioral intention of the user to use a new technology. Perceived usefulness is defined as the user's opinion of the degree to which using a new technology will enhance his/her performances at work place. While perceived ease of use, refers to the user's belief of the amount of effort that is required to use the technology (Olushola and Abiola, 2017).

The technology acceptance model is presented in Figure 2.3.

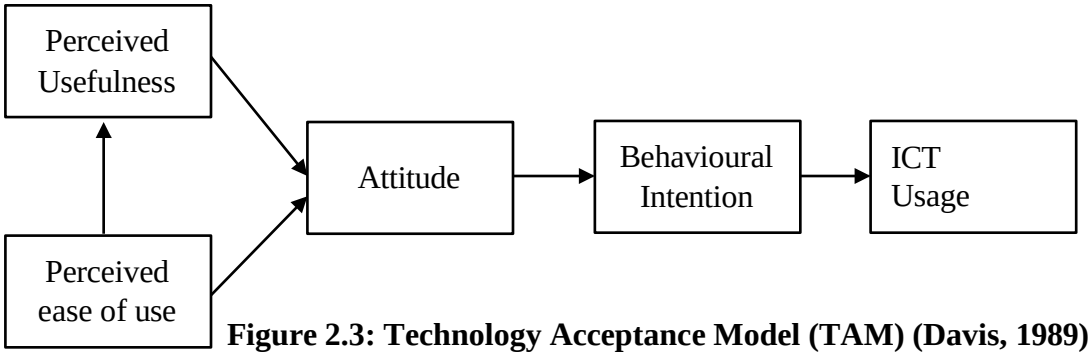

Figure 2.3: Technology Acceptance Model (TAM) (Davis, 1989)

Figure 2.3 presents the model of TAM. The theory states that an individual's intention to accept to make use of technology depends on the person's perception of the usefulness and ease of use of the technology. Individuals may likely utilise a technology if it is useful, desirable, user-friendly, and credible. TAM also states that individual perception of usefulness and ease of use are influenced by external variables such as individual differences, system characteristics, social influence and facilitating conditions.

It relates to the present study in the sense that if LIS educators are made to understand the benefits or usefulness of using ASM in enhancing their research activities and how

user-friendly the technology is they may develop interest and subsequently intensify efforts toward effective utilisation of ASM.

2.9.3 Uses and gratification theory (UGT) by Hetta Herzog (1944)

The UGT theory was propounded in the 1944 by Hertta Herzog. Herzog, (1944) investigated the motives behind why people listened to radio. In his findings, he discovered that there were four motives for listening to radio. The four motives are: for self-rating, competition, sporting and for educational motives. The author also observed that the motivation to listen to radio led to three gratifications: emotional release, wishful thinking and advice. In 1949, Bernard Berelson was motivated to carry out a research as a result of newspaper strike that was carried out in New-York. He studied the impact of the absence of newspapers on its users. In the studies, the researcher discovered that users were motivated to read newspapers because of security needs, common topics of dialogues and structures in their daily activities (Berelson, 1949).

In the same vein, Ullah (2015) opined that Blumber and McQuail in 1969 investigated the motive behind why people watch television programme during the 1960 election conducted in England. The results of the research found out that viewer's watch television because they needed change, personal relationship, identity and surveillance. Turney (2016) opined that Elihu Katz and Jay Blumler in 1974 explained the relationship users and media such media include television, radio, newspapers films and books. In their research, they sought to find out why people use certain media platforms and the gratifications they receive from specific media they utilise. Moon et al. (2022) opined that the UGT theory has also been applied in examining new media and Information Communication Technology. The originators of the theory intended to understand why

and how media users actively seek out specific media to satisfy their information needs. According to Hossain (2019), stated that UGT studies the psychological and social needs that attract users to various types of media. UGT or need seeking is one of the theories of media that focuses that emphasises that media's most important function is to satisfy the information needs and motivation of media users.

According to Moon *et al*. (2022), the UGT theory has some assumptions. The assumptions are: (1) Users are active participants in the media atmosphere. In the academic social media (ASM) context, users generate and use the contents in the media platforms. (2) Users use specific media for a reason such as to achieve a goal, directed or motivated to utilise it. ASM users have specific reasons why they utilise the various platforms. Such reasons could include seeking for information for their research, collaboration, disseminating their research findings and measuring the impact of their research output. (3) Users highly network with various communication medium. According to the assumption of this theory, patrons of media will intentionally choice the media that will most likely satisfy their information needs. The theory affirms that a particular media can be used by different categories of users for various reasons. Researchers use ASM for various reasons. The reason why a particular researcher uses ASM might be different from the reasons why another researcher uses it. For example, some researchers might use ASM to search for grants while another researcher may use the same platform to upload his publications for the purpose of visibility. (4) The fourth assumption of the UGT is the concept of expectancy. Users believe that the use of any particular media will result to specific outcome. Also, the consequences of such outcomes

can be easily ranked and evaluated. In the context of ASM researchers believe that the use of ASM will enhance their research productivity.

It can therefore be deduced that the motivation of use of ASM by LIS educators includes the following constructs: Information: ASM use by LIS educators enable them to seek for information in enhancing their research activities. ASM platforms serve as an important channel to download literature for research, search for publication channels and grants. (b) Convenience: As applicable to ASM, users are able to find access information quickly, easily and boundless. (c) Social interaction: ASM provide a platform for people to communicate and collaborate in carrying out researches.

The uses and gratification theory is presented in Figure 2.4.

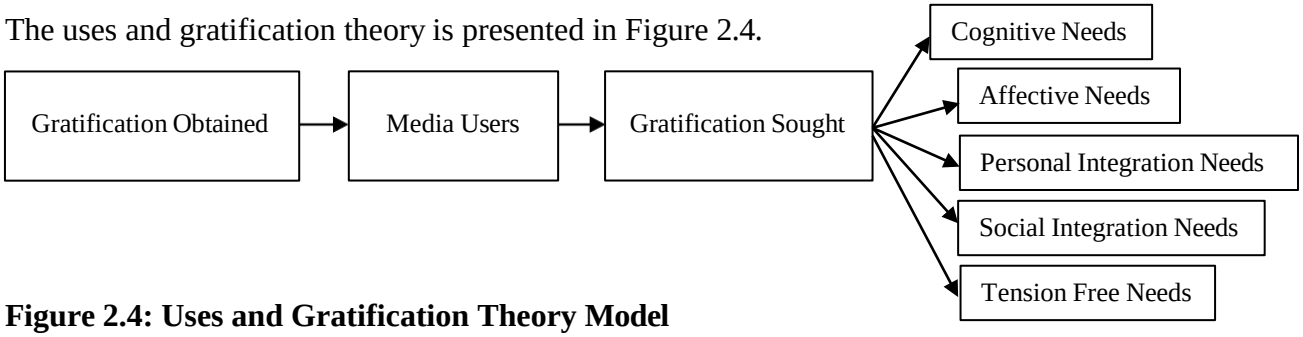

Figure 2.4: Uses and Gratification Theory Model

According to Popov (2020), the uses and gratification theory assumes that the following gratification can be obtained from the use of media (1) Cognitive Needs: People utilize media to acquire knowledge, information and, facts about a subject. (2) Affective Needs: Social media when utilized can enable users to achieve social benefits and may lead to enhanced life satisfaction. (3) Personal Integration Needs: Users use media to bolster their status and improve their credibility. (4) Social Integration Needs: Media is sometimes utilized by people to socialize with family, friends and, relations in a society. (5) Tension Free Needs: People sometimes employ media to escape from the stress they encounter in their day-to-day activities in society.

The UGT is also selected as a theoretical model for this study. This is a result of the relevance of some of the variables such as cognitive needs, personal integration needs and, social integration needs. LIS educators are likely to utilise media if it will satisfy their cognitive needs in gathering information for their research for example literature search, collection of data and, searching for potential collaborators. In addition, LIS educators may likely utilise academic social media if it will enable them to share and promote their research findings to a wider audience. Concerning personal integration, LIS educators may likely utilise academic social media to find out if people are viewing, downloading and citing their works. For this will lead to an increase in their impact among colleagues and peers.

2.9.4 Unified theory of acceptance and use of information technology (UTAUT*)* by Vankedesh Davies (2003)

According to Sarfaraz (2015), the Unified Theory of Acceptance and Use of Information Technology (UTAUT) was formulated by Vankedesh in 2003 to provide an all-inclusive understanding of technology acceptance by users, Venkatesh carried out a research for developing a unified theory of technology by integrating various models (Marikyan and Papagiannidis, 2021). The theory tries to examine the degree to which users accept the use of Information Technology in performing various tasks. Vankedesh examined, compounded and formulated a new model from eight theories such The Theory of Reasoned Action, The Theory of Planned Behavior, The Technology Acceptance Model, The Motivational Model (This is a combination of the Theory of Planned Behavior and Technology Acceptance Model), The Model of Personal Computer Utilisation, The DOI

theory and the Social Cognitive Theory (Faga, 2016). This was a result of several weaknesses that he observed in the models**.**

Furthermore, the results of the several witnesses that were observed in the older theories led Vankatesh to develop the UTAUT (Marikyan and Papagiannidis, 2021). According to the authors, the novel UTAUT structure was developed to explain and predict the acceptance of a new technology in an organisational setting it can now be applied to non-organisational settings.

The model of unified theory and use of technology is presented in Figure 2.5.

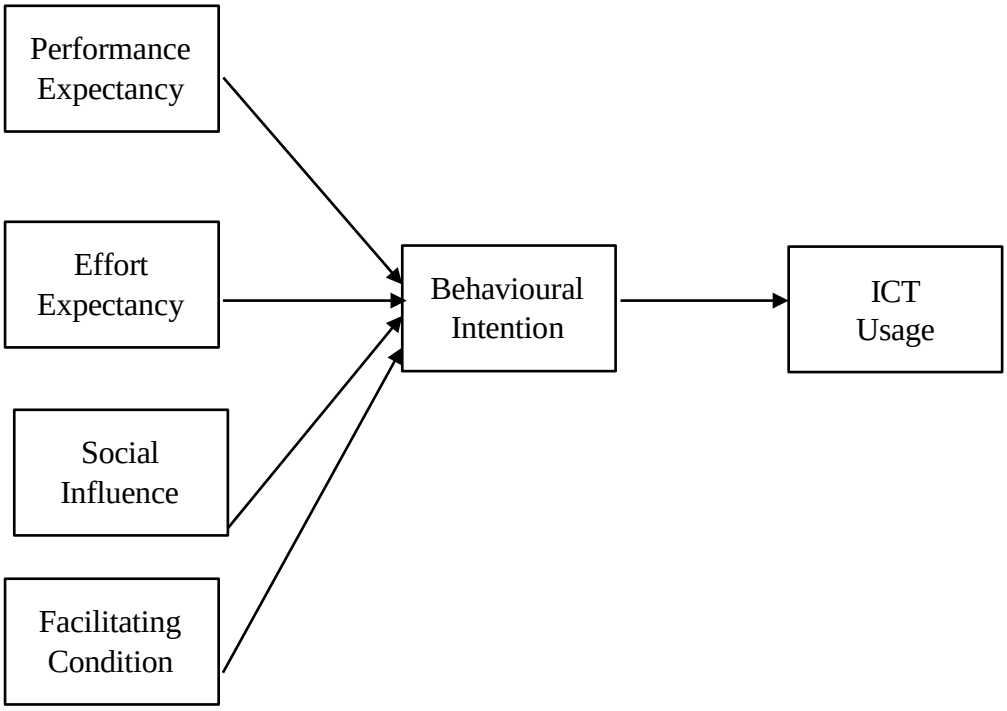

Figure 2.5: A Model of Unified Theory and Use of Technology (Venkatesh *et al.* 2003)

Figure 2.5 represents the model of the UTAUT. The UTAUT has 4 elements as pointed out by Rahi et al. (2018) (1) Performance expectancy: Users expectation of the performance of technology influences his/her intention to adopt the technology (2) Effort

expectancy: User's perception of the ease of use of technology in term of user-friendly interface determines the acceptance of the technology. (3) Social influence: Human beings cannot ignore/her social influence in their day-to-day life. A person may adopt technology because of the influence of his/her colleague and dear ones. (4) Facilitating conditions: Fear of security issues, loss of privacy, and lack of knowledge on how to use technology may affect the use of such technology.

The UTAUT was chosen for this study due to the relevance of three of the elements of the theory. The elements are performance expectancy, social influence and, facilitating conditions. These elements were applied to one of the objectives which try to find out the factors that influence the use/non-use of academic social media by LIS educators. In performance expectancy, it is assumed that LIS educators in universities in Nigeria may likely utilize ASM if they presume that it will assist them to enhance their research activities. Similarly, social influence such as recommendations from colleagues and institutions may likely influence academic social media use by LIS educators. Furthermore, facilitating conditions also have a role to play in academic social media utilisation by LIS educators. Issues such as privacy, lack of knowledge on how to use ASM, lack of training may also influence ASM use by LIS educators.

2.10 Review of Related Empirical Studies

2.10.1 Studies on academic social media (ASM)

Anyim (2021) conducted a study on the use of ASM sites among lecturers in State universities in South East, Nigeria. The research method adopted for the study was a descriptive survey research design. The population of the study was 200 lecturers in five State owned universities in South East, Nigeria. The total enumeration sampling

technique was used for the study. The instrument for data collection was questionnaire. The data gathered were analysed by use of descriptive statistics.

The findings of the study revealed that respondents' main purpose for utilizing ASM was for knowledge sharing, downloading articles, uploading articles to attract citations, information sharing, and increasing views/reads. The findings also showed that the majority of the respondents have access to various ASM platforms several times a day and usually daily. Based on the findings of the study, it was recommended that lecturers in Southeast Nigeria should explore other ASM sites other than Google Scholar and Research gate due to their potential for enhancing research activities. The similarity with the present study is that both studies inquired into the frequency of use of ASM by respondents. The gap in the latter study is in terms of scope, for it covered only 5 state-owned universities in southeast while the present study covers all the universities in Nigeria.

Yan *et al.* (2020) reported how scholarly use of ASM platforms differs by academic disciplines in a case study of Research gate. The sample size was 77,902 users of Research gate from 61 U.S research universities. Data was collected and analysed by use of content analysis, inferential statistics, and descriptive statistics. The results show that the degree to which users utilise academic social media platforms varies by discipline. In addition, users from institutions who engage in higher research activities level tend to use Research gate more compared to institutions where their research activities were low. The similarity between this and the current study is that the present study focused on Research gate as one of the platforms selected for the study. The major dissimilarities between both studies are that one study only looked at variation in disciplines as the only

factor that influences ASM, while the other study investigated how several factors such as Performance expectation, social influence, and facilitating conditions can influence ASM use.

Salami *et al*. (2020) also examined the use of ASM in enhancing the research output of faculty members in Federal Universities in Nigeria. The study adopted a descriptive survey research design and the population of the study was 11,567 faculty members in Federal Universities in Nigeria. The sample size was 387. Data collected were analysed through descriptive statistics. The major findings of the study showed that faculty members use academic social media to seek and obtain knowledge from other researchers. Furthermore, academic social media has enhanced various types of research output such as journal articles, conference proceedings, thesis/dissertation, and working papers. The findings of the study further revealed that faculty members utilized three major types of ASM platforms which are Academia.edu, Google Scholar, and Research gate. It was recommended that faculty members in Federal Universities in Nigeria should endeavor to share their contribution to knowledge with a wider audience through ASM.

The research shares certain similarities with the present research in terms of using ASM in enhancing research. This study inquired into the use of ASM in enhancing research activities while the former research studied the utilisation of ASM in enhancing research outputs. The later research population consisted of all faculty members in Federal universities in Nigeria while the present research population is made up of all library and information science educators in universities in Nigeria.

Oh and Conlon-Aguire (2019) adopted a descriptive survey research design and investigated the perception and use of Google Scholar and academic library discovery

systems among graduate students, post-doctoral students, and professors in public research universities in the United States of America (USA). The study adopted a simple random sampling technique to select 20 research public universities out of the public research universities in the USA. The sampled population comprises of 1650 respondents. Data were analysed by use of an online questionnaire and 950 scholars responded to the questionnaire. The data was analysed by use of descriptive statistics. The findings revealed that respondents perceived the use of Google Scholar and academic library discovering services as highly accessible and useful in information search.

Scott and Swanepoel (2018) explored the use of Institutional repositories, Research gate, and Academia.edu.by Canadian and South African scholars. The study utilised the descriptive survey research method. Interviews were also conducted with sixty scholars at six universities in South Africa and Canada. The institutions were North-West University (South Africa), University of Calgary, Canada, University of Lethbridge (Canada), The University of Pretoria (South Africa), and University of Pretoria (Canada). The findings revealed that most of the scholars preferred academic social media such as Research gate and Academia.edu compared to institutional repositories in sharing their research findings and connecting with other scholars internationally. As a result of this, they were not active supporters of their local institutional repositories.

The study recommended that scholars in these institutions should both be active participants in institutional repositories. The current study shares some similarities with the later study for both studies adopted descriptive research design in analysing their data. The dissimilarities between both studies are the current study used a questionnaire to collect data while the former studies adopted interview method.

Bardakeij *et al.* (2017) investigated how scholars use ASM networking services in Turkey. The population of the study consisted of 95 scholars from 34 different universities and 29 different departments in Turkey. The method of data collection was questionnaire. Data were analysed by use of descriptive statistical analysis. The findings of the study revealed that the respondents utilised academic social media platforms. However, they do not utilize them as a way to broaden their knowledge through collaboration.

The researchers recommended that Turkey Scholars should embrace collaboration, especially in knowledge sharing. The relationship between the study and the current study is that both studies collected and analysed their data by use of questionnaires and descriptive statistics. The difference between both studies is that the study was carried out in Turkey while the current study was carried out in Nigeria.

Boudry and Durand- Barthez (2017) reported the use of ORCID, Researcher ID, Academia.edu, and Research Gate by the researchers of the University of Caen Normandy in France. Descriptive survey research was used and the population of the study was 1,047 researchers from the University of Caen Normandy, France. Data was collected by the use of content analysis and analysed through descriptive analysis. The data from the study revealed that the majority of the respondents had at least one profile on the various sites. The data further revealed that Research Gate was the most used ASM platform by respondents. The data showed that French researchers have not adopted the use of ORCID and Researcher ID. The researchers recommended that researchers at the University of Caen Normandy, France should utilise these sites to have access to the services they provide. This study is related to the present study because both

studies studied the various types of academic social media such as Academia.edu, Research Gate, and ORCID. They differ in the type of instrument for the collection of data, and the country in which the study was carried out.

Kenchakkanavar, *et al.* (2017) examined the use of academic social networking sites by research scholars at the University of Dharwad, India. A survey research design was adopted for the study. A simple random sampling technique was adopted to select 200 respondents for the study. The method of collection and analysis of data was questionnaire and descriptive statistics respectively. It was revealed from the data analysis that respondents were spending much time on ASM platforms. It was equally revealed that lack of access to internet, ASM use by university management, unwanted notice from various academic social media platforms and lack of privacy were problems hindering the effective use of ASM by respondents.

The researchers recommended that the university management should grant research scholars in the university of Dharwad access to the internet for the utilisation of ASM in facilitating their research activities. The study shares very close similarity with the current study because it focused on the use of ASM in enhancing research activities. In disparity, in both studies is that the population of the former study is made up of research scholars in the University of Dharwad, India while the current study population is LIS educators in universities in Nigeria.

Singson and Amees (2017) carried out a study on the use of Research gate by the research scholars of Pondicherry University in India. The study adopted survey research design. Simple random sampling technique was used to select 140 scholars who have profiles in research gate. The instrument of data collection was a closed-ended

questionnaire. Percentage and graphs were used to analysis the data. The findings of the study revealed that Research gate is popular among research scholars at Pondicherry University. They used the platform to connect with people who have a similar research interests, read articles, and review papers posted to the platform by other scholars. The current study shares some characteristics with the study as both studies focused on Research gate and both studies utlised survey research design. The gap in the two previous studies is that the population of one study was not stated. Also, the researchers focused on only Research gate and the study was carried out at Pondicherry University.

Tai and Pieterse (2017) investigated why academics use ASM networking sites. The population of the study comprises 298 faculty members at three academic institutions in Israel. Total enumeration was used as sampling technique for the study. Data were analyzed by use of frequency counts, tables, pie charts, percentages, and standard deviation. The findings of results revealed that none of the participants obtained high scores from engaging in various activities on academic social media platforms. The highest form of activity they engaged in was information consumption and Information sharing.

The researchers recommended that faculty members in the three institutions in Israel should strive to be active members of various academic social media platforms. Their study is related to this study because both studies sought to find out the use of ASM by faculty members and descriptive statistics was used to analyse data in both studies. The limitation of their study was that it focused on faculty members in various disciplines without considering their homogeneity and characteristics.

Sheikh (2016) investigated the awareness of ASM websites by the faculty of COMSATS Institute of Information and Technology, (CIIT) Islamabad using descriptive survey research design. The population of the study was 2000 faculty members in the institute. Data were collected through the use of questionnaires and analyzed by using frequency counts, percentages and pie-chart. The findings revealed that faculty members in CIIT utilised ASM but were not active users of the platforms.

The findings also revealed that lecturers in CIIT used ASM sites mostly for interacting with experts, promoting/sharing their research output, participating in discussions to get ideas about the latest research trends, and getting help in solving research problems. The author recommended that the CIIT library at the Islamabad campus should conduct regular training for faculty members through emails and workshops. This study shares some similarities with the later study because both studies focused on ASM use by lecturers. This research adopted the methodology of Sheikh (2016) which is survey research design.

Mikki *et al.* (2015) determined the digital presence of Bergen University, Norwegian scholars in various academic social media platforms such as Research gate, Academia.edu, Google Scholar, Researcher ID, and ORCID. It was a survey research design. The population of the study consisted of 11,442 researchers at Bergen University. Data were analysed by using descriptive statistics. The findings of the study revealed that 37% of the researchers at Bergen have at least one profile and Research gate was the most widely used platform.

This study shares similar characteristics with the present study in the area of academic social platforms studied such as Research gate, Academia.edu, Google Scholar, and

ORCID. They also share similarities in the area of data analysis. The clear differences between the two studies are that the present study is being conducted in Nigeria while the former is not. Also, the present studies, focused on LIS educators while the former is generally on researchers.

Jamali (2015) adopted a mixed research design and investigated scholarly reputations in the digital age and the role of emerging platforms among physics and astronomy scientists at University College London. The population of the study was 114 physics and astronomy scientists at the University College in London. Data were collected by the use of questionnaires and interviews. Data were analysed by use of descriptive statistics. The result of the study shows that Google Scholar is the tool mostly used for information seeking. The results also indicated that scientists rely more on Google Scholar for finding scholarly literature.

It was recommended that respondents should utilise other academic social media platforms in search for scholarly literature. The current research shares certain similarities with the study in terms of the use of ASM in enhancing research information gathering. The differences between both studies are that the latter study only covered one dependent variable scholarly literature, while the present study covered several dependent variables such as research information gathering, collaboration, dissemination of information, and measuring research impact.

Ramezani-Pakpour-Langeroudi *et al.* (2015) investigated the presence of Iranian highly cited clinicians on academic social networking platforms. The study adopted scientometrics using essential science indicators (ESI). The population of the study consisted of 107 authors who uploaded their articles on Research gate, Academia.edu,

Mendeley, and Linkedin. The study adopted content analysis to collect data and the data were analysed by use of descriptive statistics. The study revealed the following findings: Research gate, LinkedIn, and Academia.edu was the most popular social media utilised by highly cited authors in Iran. There was a significant influence between academic social media and citation rate and there was a positive direct relationship between visibility on social media platforms with citation and h-index rate. The study recommended that all scientists should ensure that they create profiles on social networking sites to enhance their visibility as researchers. This study relates to the current study in terms of the various academic social media platforms studied, but differs in the scope. The former study captured Iranian scholars while the present study focused LIS educators in universities in Nigeria.

2.10.2 Studies on social media

Adetayo (2021) adopted survey research design to investigate the use of social media (SM} and the research productivity of lecturers in private universities in Ogun State Nigeria. The population of the study comprises 1353 lecturers in seven private universities in Ogun State Nigeria. A purposive sampling technique was adopted to select 621 respondents to participate in the study. Data for the study were analysed by use of descriptive and inferential statistics. The data revealed that there was a positive but very weak and significant relationship between SM and research productivity. It was also revealed from the study that social media tools such as collaborative tools were utilised by respondents. The data further revealed that respondents do not utilise social bookmarking tools and citation tools in enhancing their research productivity. The

researcher recommended that lecturers in private universities in Ogun State should improve their knowledge of social book marking and citation tools.

This study has very significant similarity with the current study in terms of the instruments used in analysing data. Both studies used descriptive and inferential statistics in analysing data. The major notable disparities in these studies are the former focused on the influence of social media on the research productivity of faculty members in private universities in Ogun State, while the present study focused on the influence of ASM on the research activities of LIS educators in universities in Nigeria.

Onuohia *et al.* (2020) determined the use of social media as a collaborative tool for research among LIS professionals in Nigeria. The study utilised a descriptive survey research design. An electronic questionnaire was utilised in eliciting information from respondents. Based on the purposive sampling technique 101 librarians and lecturers were selected to participate in the study. Data were analysed by use of descriptive statistics. The findings of the study revealed that all the respondents agreed that social media platform tools enable researchers to enhance their research collaborative activities. The findings further revealed that issues such as lack of knowledge on social media use and low level of ICT skills among respondents hinder effective use of social media in enhancing research collaborative activities.

The researchers recommended that self-development opportunities should be exploited and that LIS professionals should ensure they attend online and webinar seminars on the application of social media to collaborative research. The study is similar to the present study because both studies used the same variable research collaboration. The limitation of the latter study is that it only examined just one dependent variable.

Al-Daihani et *al*. (2018) investigated the use of social media by social science academics for scholarly communication at Kuwait University. The research design for the study was a survey research design. Data for the study were collected through content analysis, questionnaires, and interviews. The population of the study was 100 faculty members and a total enumeration sampling technique was adopted for the study. Data were analysed by use of descriptive statistics. The findings revealed that Twitter and Facebook were the most frequently used platforms, followed by Instagram and Youtube. The findings further revealed that Research gate was moderately utilized, while the utilisation of Academia.edu was relatively low.

The study shares some similar characteristics with the current study in the area of population both studies focused on faculty members. However, the major differences between both studies are: The current study focused on LIS educators in universities in Nigeria, while the previous study focused on social science academics in Kuwait Universities. The present study also investigated how ASM could influence various research activities while the study was on the use of social media for scholarly communication.

Jaring and Back (2017) conducted a study on how researchers use social media to promote their research and network with the industry. The study adopted a survey research type. The data for the study was gathered by interviewing 12 researchers of the Valtion Teknillinen Tutkimuskeskus (VTT) research organisation in the Nordic area and questionnaire was administered to 14 product developers from various countries such as Italy, Belgium, Finland, New Zealand and Romania.

Descriptive statistics was used to analyse the data. The findings showed that social media is perceived by respondents as a good medium to source for information and contacts. It is also suitable for creating awareness of research services and results. The study recommended that respondents should be active in posting information and also participate in discussions. This will enable them to enhance their reputation. The study shares similarities with the present study because both studies adopted a survey research design. The gap observed in the latter study is that the sampling method was not stated.

Collins *et al.* (2016) reported how scientists used social media in their workplaces in the United States of America, the United Kingdom, New Zealand, Australia, and Canada. The research method used for the study was the descriptive survey research method. The population of the study was 587 scientists. In the study, data were collected through a questionnaire which was produced and distributed electronically using online survey software. Snowball was the sampling technique used, while data was analyzed by use of frequency, percentages, and pie-chart. Based on the findings, it was observed that social media usage was yet to be widely adopted by scientists in these countries. Many scientists followed science-themed Facebook pages which they used basically for personal communication. The researchers also found out that the most widely used platform was Linkedin.

However, despite the low frequency of use, the scientists perceived that there are numerous potential advantages of using social media in the workplace. The researchers recommended pieces of training, workshops, and clearer departmental social media usage policy formulation to enhance social media usage. These measures might help to ensure that more scientists enjoy the professional benefits of social media.

This study is related to the present study because both studies used descriptive statistics in analysing data. The major differences between both studies are that the present study focused on academic social media use while the former study focused on general social media; the population of the present study is LIS educators in Nigeria while the former study's population was scientists in the United States of America, United Kingdom, New Zealand, Australia, and Canada; and the former study focused on how scientists use social media generally in their workplace while this study focused on ASM in enhancing research activities.

Kenchakkanavar, *et al*. (2016) carried out a study on the attitudes of research scholars on the use of social networking sites. The research design adopted for the study was a survey of 227 research scholars were randomly sampled from 12 science departments at Karmatak University at Dharwad, India. Questionnaire was the instrument used in collecting data which were analysed by use of descriptive statistics. The study found that Research gate, Academia.edu, and Slideshare were the most popular ASM used by respondents. The purpose of utilisation of ASM was to share research-related information. It was equally revealed from the study that respondents had a positive attitude towards ASM use for they agreed that social media has greatly impacted their research activities. On the problem hindering effective use of ASM, most respondents indicated that their university management denied them access to the internet for the use of social media. The authors recommended that university management at Karmatak University at Dharwed, India should endeavour to grant research scholars access to the internet for utilisation of social media for facilitating their research activities. This research has similar features to the current study for it inquired into the influence of

performance expectancy on social media use and also the study adopted a random sampling technique. The dissimilarities between both studies are while the current study was carried out in Nigeria the later study was conducted in India.

Opesanwo and Mabawonu (2016) studied the influence of the use of social media on the research productivity of lecturers in two selected universities in South West, Nigeria. The study adopted a survey research design. A multi-stage sampling technique was adopted and a total of 194 lecturers at the University of Ibadan, and the Tai Solarin University of Education, Ijagun, Ijebu-Ode in Ogun State were sampled. A questionnaire was the instrument for the collection of data. Data collected were analyzed using percentages, frequency counts, means, and standard deviation. The hypothesis was tested by the use of inferential statistics.

The findings of the study showed that there is no significant influence of social media on research productivity. On the aspect of the type of research output that is influenced most by the use of social media, the study revealed that publications in learned journals, conference papers, occasional papers, and textbook publishing were the aspects influenced most by the use of academic social media. The findings also revealed that privacy issues, security issues, copyright, intellectual property issues, information overload, time consumption, and lack of institutional support were the challenges militating against the use of social media for research by lecturers.

The following recommendations were made in the study; university lecturers in Nigeria should change their orientation about social media and use them for research to enhance their visibility, there should be institutional support for use of social media for research, conferences, and workshops on social media use should be organised for lecturers,

management of institutions of higher learning should make effort to reduce to the barest minimum the various challenges faced by academics on use of social media for research. The study is similar to the present study because the two are hinged on the influence of social media on research. The limitation of the previous study was that the population of the study only comprised two universities in South West, Nigeria.

Mansour, (2015) examined the usage of social networking sites by the faculty members of the school of LIS at the College of Basic Education, Kuwait and The Public Authority for Applied Education and Training, Kuwait. Descriptive survey research was adopted for the study. The population of the study consisted of 33 faculty members of the School of Library and Information Science at the College of Basic Education and The Public Authority for Applied Education and Training, Kuwait.

Data was collected and analysed by use of questionnaires and descriptive statistics. The study revealed that faculty members were moderately utilizing social media in their academic activities. The study further revealed that the average age range of faculty members who were using social media was between 41-50 years. Similarly, it was revealed from the studies that there was no significant difference between the demographic data of respondents and the use of academic social media. It was reported in the study that faculty members majorly utilized social media for sending messages and finding general and specific information. Time, trust, and lack of training and skills had a significant relationship with social media use.

The study recommended that non-users should be provided with training opportunities to foster their skills. This study is related to the present study because the present study is also investigating the use of academic social media among faculty members in LIS in

universities in Nigeria. Also, the former study is similar to the current study in the areas of design, instrument for data collection and analysis. In contrast, the former studied the usage of social networking sites by the faculty members of the school of LIS at the College of Basic Education and The Public Authority for Applied Education and Training, Kuwait while the current studies focused on LIS educators in universities in Nigeria. The former also investigated the general use of social media for academic activities. While the present study investigated the use of academic social media in influencing research activities.

Alabi *et al.* (2014) examined whether agricultural researchers in the agricultural industry use social media for research. A survey research design was used for the study. The purposive sampling technique was used to select 140 agriculturalists in six agricultural research institutes and a university of agriculture in South West, Nigeria. The study used a questionnaire to collect data while frequency counts and percentages were used to analyze data. The findings revealed that the majority of the respondents are middle-aged. Their reason for using social media is to establish a connection with their professional colleagues. The findings also revealed that the major benefit derived from using social media is exposure to the latest skills and knowledge in their profession.

The following recommendations were made: every agricultural researcher should subscribe to and maintain multiple accounts on social networking sites, an agricultural scientist in Nigeria should be mandated to publish their result at least twice a week on the web, agricultural scientists in Nigeria should be encouraged to network and collaborate with colleagues, and that they use social media to get mentors and mentees to keep their profession alive. The relationship between the study and this study is that both studies

examined how social media can be utilised to enhance research activities. The limitation of the previous study is that it focused on the use of social media by Agricultural scientists.

Mouroner and Fauck (2014) adopted survey research design to investigate the use of social media in science marketing, framework instruments, and strategies in German Research Institutes. The study consisted of 70 research institutes at Fraunlo, Germany between 2010-2014. Data were analysed by use of a descriptive research design. The study found that social media strategies are needed in decision making. The study also deduced that social media is necessary for information-seeking and obtaining knowledge. The findings further revealed that many research institutes' managements were conservative about the use of social media in their workplace. The similarity between this study and the current one is that both studies adopted a survey research design. The dissimilarities between both studies are that one study was conducted in Germany while the current study was in Nigeria.

Al-Aufi and Fulton (2014) adopted a descriptive survey research design to examine the use of social networking tools for informal scholarly communication in humanities and social sciences disciplines at Sultan Qaboos University Oman. The total population size was 146 faculty members in humanities and social sciences disciplines at Sultan Qaboos University, Oman varying from post-doctoral positions or equivalent to professors. The major findings of the study suggested that two-thirds of academics in humanities and social sciences disciplines were not using social media tools for informal scholarly communication. From the findings, it was discovered that one of the reasons why

academics used social media was to communicate and collaborate with peers and other academics or researchers locally and internationally.

Respondents reported that the major challenges associated with the use of social networking tools for informal scholarly communication were concerns about lack of encouragement by their institutions, security, digital literacy and lack of training. The non-adopters of social media indicated that the tools were not relevant to scholarly communication. The researchers recommended that further research should be undertaken using other research techniques such as interviews or focus groups. This may increase the understanding of academic perceptions, experiences, and use of social networking tools for scholarly communication. The research shares some similarities with the present study in the areas of research design and data analysis. The two studies adopted a survey research design and descriptive statistics. The differences in the studies are the population. The former study population consisted of academics in humanities and social sciences disciplines while the present study population is made up of LIS educators.

Florante and Jamias (2013) used survey research design to determine the use of social media at the University of Philippines, Los Barnes. The proportionate sampling technique was used to select 86 researchers working at the University of Philippines, Los Banos. Data was collected and analysed by use of questionnaires, descriptive and inferential statistics respectively. The study showed that age, connectivity, research style, and technology adoption behavior did not influence the use of social media.

The study further revealed that the researcher's awareness, connectivity, research style has a significant relationship with social media use. It was recommended that university

administrators should promote social media in enhancing research by drafting social media policy. This study shares similar characteristic with the current study for it investigated how social media can be utilised in facilitating research. The gap between the study and the present study is the geographical scope which is Philippines and Nigeria respectively.

Nadex and Borrego (2013) investigated the use of social networks for academic purposes in twelve Catalan universities, Spain. The population of the study consisted of 1,263 graduate students and faculty members in twelve Catalan universities. Data were collected by the use of observation and questionnaires and analysed using percentages. In the findings, it was deduced that the four main reasons for using academic social media were to get in touch with other researchers and disseminate research output, follow other researchers' activities, disseminate their curriculum vitae.

The researchers recommended that management in institutions in Catalan should define who will be responsible for enforcing the use of social media in the academic environment. The research is related to the present study because both studies inquired into the use of social media in enhancing research activities. The dissimilarities between both studies are that the population of the study consisted of faculty members and students while the population of the present study is LIS educators.

Justin and Rehema (2012) investigated the use of social media in agricultural research workflows in Ghana and Kenya. The study employed a descriptive survey research method. The population of the study was 338 agricultural researchers in two organisations in Ghana and Kenya (one organisation in each country). Data was collected

using an online questionnaire which was hosted on the survey monkey platform. The data for the study was analyzed through the use of frequency counts and percentages.

The findings of the study showed that researchers have profiles/accounts on social media. Face book was the most actively used social media followed by Linkedin and Skype. The findings further revealed that social media in agricultural research workflows is mainly used in identifying research opportunities and finding potential collaborators for research tasks. The researchers recommended that there was a need for agricultural research organizations to improve their Internet connectivity and to implement policies and strategies that can encourage researchers to make use of social media tools in the dissemination of research results. This research adopted online questionnaire as the instrument for data collection. The difference between the study and the present one is the former study population comprised of agricultural researchers while this study's population consists of LIS educators.

Rolands *et al*. (2011) also reported on the use of social media in the research workflow of 2414 sampled researchers all over the world. The study adopted the use of a survey research design. An online questionnaire was used as the instrument for data collection while percentages and frequency counts were employed to analyze data. From the findings, it was deduced that social media impact all the processes of the research lifecycle, from identifying research opportunities to disseminating research findings.

Similarly, the study also found out that the three most popular social media tools in research were those for collaborative authoring, conferencing, and scheduling meetings. The most popular social media used by researchers were Twitter and Skype. From the findings of the study, it was observed that age is a poor predictor of social media use in

research. The study further revealed that journals, conference proceedings, and edited books remain the core traditional means of disseminating and discovering research, with institutional repositories. The researchers recommended that publishers should make content readable on various platforms. This study has significant similarity with the current study in terms of types of social media and the most popular social media used by lecturers in facilitating research output. The differences between the two studies are that the current study studied ASM while the previous studies researched social media.

2.10.3 Studies on research activities in library and information science (LIS)

Jan and Ibrahim (2020) carried out a study on the research activities of LIS professionals in Pakistan. The main objectives of the study were to find out to what extent LIS professionals in Pakistan read, conduct and apply relevant research by examining their research activities and attitudes. The study adopted survey research design. The population of the study consisted of members of the three major library professional associations in Pakistan (Pakistan Library Association, Library Welfare Association and Pashawar Librarians Association). The study used questionnaire to collect data and the data were analysed by use of descriptive statistics. The findings from the study revealed that respondents lacked understanding about research activities, non-availability of research journals and non-applicability of research output in libraries by LIS professionals were the major challenges facing LIS research in Pakistan.

The study recommended that systematic research, evidence based training; and lunching research journals and consulting donor agencies for fund raising are key components that could be utilised to enhance library professionals' research activities in Pakistan. The major similarity in the study and this one is the variables such as research activities of

LIS educators. The dissimilarities between both studies are that one study looked at research activities of LIS while the other study investigated how ASM can enhance research activities of LIS.

Razazadeh *et al*. (2019) adopted a survey research and investigated the challenges and problems of LIS research in Iran. The population of the study was 13 directors and professors of knowledge and information science departments at University of Pagem, Iran, Noor University, Iran and Scientific and Applied University, Iran, Data for the study were collected through interview, while the data were analysed by use of descriptive statistics, The findings of the study revealed that human challenges, lack of time management, financial crisis, lack of research popularity, weak research structure, lack of commitment and research duplications were the major challenges facing LIS research in Iran.

The study recommended that university management should focus on empowering researchers in their institutions to conduct quality researches. The current research shares certain similarities with the study in terms of research method utilised. Both studies used survey research method. The major disparities in these studies are the former was conducted in Iran, while the current study was conducted in Nigeria.

Usman and Ewulum (2019) made a study on bibliometric analysis of the Journal of Applied Information Science and Technology (JAIST) to portray the productivity of LIS literature from Nigeria. The data were collected by use of bibliometric analysis. Descriptive analysis was used in analysing the data. The investigation was centred on the productivity, geographical productivity; and authorship pattern and subject coverage of JAIST published from 2007 -2017. Findings of the study revealed that the productivity of

LIS literature in Nigeria is flourishing, 182 articles were published in JAIST in 11 years. The authorship pattern of LIS literature is highly collaborative.

The findings also revealed that the geographical spread of JAIST indicates heavy dominance in 3 out of 6 geographical regions of Nigeria with very little international presence. The researchers recommended that LIS scholars in Nigeria should expand their reach to their counterparts in other parts of the world and publish together with them so as to contribute more to the world chart of LIS literature. The study shares some similar characteristics with the current study in the method of data analysis. The both studies utilised descriptive statistics in analysing data. The dissimilarities between both studies are the instruments used in collecting data. The present study used questionnaire for collection of data while the previous studies used bibliometric analysis.

Gichugu (2018) examined the status of information science faculty and librarians collaborative research in selected Kenyan universities. A survey research design was used for the study. A total of 143 respondents comprising of 61 faculty members, 6 chief librarians and 76 librarians from six Kenyan universities offering LIS degree made up the population of the study. Data for the study were collected by use of questionnaire, interview schedules and bibliometrics. Descriptive statistics were used for analysis. The key findings from the study revealed research productivity in LIS is still at low levels, that majority of the faculty members and the librarians are familiar with concept of collaborative research and they believe it can provide a solution to a number of challenges facing LIS profession. The study also found out that collaborative research practice is still low among respondents. The study found low interaction levels between

faculty and librarians, absence of working forums, absence of university support and lack of individual commitment as the major challenges to collaborative research.

The study recommended that recommended that faculty members need to reach out to librarians to share ideas and experiences. Librarians should shift from just being custodians and disseminators of information to creators through research beside teaching. The universities on their part need to come forth and provide support in terms of funds, necessary training and incentives for research. The relationship between the study and this study is that both studies examined collaborative research. The limitation of the previous study is that it focused on enhancing collaborative research between faculty members and librarians while the present study focused on how ASM use can enhance collaborative research.

Okeji (2018) examined the growth of LIS professional's research output in universities in Nigeria. The study investigated their research productivity and determined the authorship pattern and degree of collaboration. The research design was Survey research design. The study used descriptive statistics to analyse data. The research used bibiometric analysis to collect data for the study. A total of 1,106 articles were retrieved from index to journals in Education and Library and Information Science and Technology Abstract database for the period 2000- March 2018. The study revealed that only few authors were productive and often cited in the field of LIS during the period under review. The findings also showed a high level of teamwork, with most publications being produced jointly and articles published by the respondents in local journals in Nigeria were not indexed and were therefore not visible.

The researcher recommended that faculty members and librarians in developing countries should ensure they publish in journals that are indexed and are widely visible. The study shares similar characteristics with the present study in the area of research collaboration. The clear differences between the two studies are the present study used questionnaire to collect data while the previous study used bibliometric analysis to collect data.

Ani *et al.* (2017) examined patterns of publication in LIS research in Nigerian universities from 2000 to 2014 in terms of the trend in publication output in LIS research the most visible universities, authors and publication sources. Survey research design was used for the study. The data was collected by use of bibliometric analysis. The web of science was used as the source of data. The findings revealed that University of Ibadan, University of Nigeria and Delta State University were found to be the three most visible universities in LIS research in Nigeria in terms of dissemination of research findings. Based on the findings of the study, it was recommended that there should be increased investments in LIS research by Nigerian universities. The major similarities in the study and this one are the research method, for both studies used survey research design. The dissimilarities between both studies are the methods of data collection. The previous study used bibliometric analysis to collect data and the present study used questionnaire.

Bhardwaj, (2016) reported the research activities of LIS professionals in Indian higher educational institutions. The research design of the study was a survey research design and the population of the study was 170 LIS professionals in higher educational institutions in India. The study adopted survey research design. Data were collected by the use of a questionnaire. Descriptive statistics were used in analysing the data. Findings from the study revealed that respondents read research literature regularly and their

preferred mode of dissemination of research findings were publishing papers in conference proceedings and referred journals.

The study further revealed that majority of the respondents indicated that they followed theoretical approach and survey method in conducting research. Lack of funding support, time constraints and problems in data collection were identified as the major challenges respondents faced in carrying out research. The study recommended that funding agencies and university management need to come forward to encourage LIS professionals to conduct research. The study shares some similar characteristics with the current study in the area of instrument of data collection. The both studies used questionnaire to collect data. The major dissimilarities between both studies are that one study was conducted in Nigeria, while the other study was conducted in India.

2.10.4 Studies on theories

Williams *et al.* (2020) carried out a study on students' perceptions of the adoption and use of social media in academic libraries in two universities one each in Belgium and South Africa. The study adopted the constructs as stated by Unified Theory of Acceptance and use of Technology namely: performance expectancy, social influence, effort expectancy, and facilitating conditions to explore perceived intentions to utilise social media. The study adopted survey research design. The sampled population consisted of 30 students. Data were collected by the use of interviews and were analysed through inferential statistics. The results of the studies showed that the adoption of social media is greatly influenced by effort expectancy, performance expectancy, facilitating conditions, and social influence. The researchers recommended that the internet facilities should be provided by the university management. The study shares similarities with the

present study for both studies adopted the Unified Theory of Acceptance and use of Technology. The dissimilarity between the two studies is that the former study used interview method to collect data while the present study adopted questionnaire.

Nagvi *et al.* (2020) investigated the effect of social influence, trust, and entertainment value on social media use by scholars of the University of Punjab, Lahore, Pakistan. The study adopted a case study research design. Convenience sampling was used to select 353 respondents who participated in the study. The data was collected by the use of questionnaire and inferential statistics was used to analysis the data. The data revealed that social influence such as recommendations from friends had positive effect on use of social media. The relationship between the study and the current study is that both studies adopted the Unified Theory of Acceptance and use of Information Technology. The differences between both studies are one was conducted in Pakistan while the other was conducted in Nigeria.

Ameen *et al*. (2019) investigated the key factors influencing the use of online social networks by employees in the public sector of the United Arab Emirates. The study adopted the unified theory and use of technology conceptual model which indicated the relationship between various variables such as performance expectancy, effort expectancy, social influence, and facilitating conditions. The sample of the study was 750. Data were collected by the use of a questionnaire and a structural model assessment was used to analyse the data. The results of the study revealed that all the constructs in the Unified Theory and Acceptance of use of Technology have an influence on the use of social media. The similarities between the study and the current one are they utilised questionnaires in collecting data. The dissimilarities between both studies are the

population of the studies one is employees in the public sector of the United Arab Emirates, while the population of the other is LIS educators in universities in Nigeria.

Almarri *et al.* (2019) conducted a study to determine the factors influencing the satisfaction with the use of social media among colleagues in the Tourism Development Company in Abu Dhabi. The study adopted a quota non probability sampling technique to collect data and received 401 responses from respondents. The study adopted unified theory and acceptance of use of technology. The study also used structural equation modeling to analyse the research hypotheses.

Findings from the study revealed that facilitating conditions influence the actual use of social media. The study recommended that tourism organisations in Abu Dhabi should endeavour to utilise academic social media for it will serve as a medium to promote economic growth, enhance employee productivity and government efficiency. The current study shares some similar characteristics with the former study for both studies investigated the factors that influence the use of social media and academic social media respectively. The differences between both studies are that the study adopted random sampling technique while the former study used quota non probability sampling techniques.

Diaz-Campo *et al.* (2019) adopted the Uses and Gratification Theory (UGT) to examine the motives for using social networking sites. A descriptive survey research design was adopted for the study. The population of the study was 18 professors in Spanish universities. Data was collected and analysed by use of questionnaires and percentages respectively. The findings of the study revealed that social media networking sites were used to manage content and identify experts in a researcher's field of knowledge or

interest. The study further identified privacy issues as the major issue of non-utilisation of social networking sites. The research is related to the present study for both studies adopted UGT. The gap between the study and the present study is the geographical scope.

Meler and Dick (2018) adopted the Unified Theory of Acceptance and use of Technology (UTAUT) for the study to find out the extent to which social influence, effort expectancy, and performance expectation influence the use of the Research gate. The population of the study consists of 695 scientists who were users of Research gate from the following disciplines: biology, physics medicine, and neuroscience. Data was collected and analysed by use of an online questionnaire and descriptive statistics respectively. The data revealed that effort expectancy did not influence respondents' use of the Research gate.

The results also show that performance expectation and social influence have a significant influence on the use of the Research gate by respondents. The study is similar to the present study because both studies adopted the UTAUT. However, the dissimilarities between both studies are: the current study population comprises of LIS educators in Nigerian universities while the latter study population is scientists in various disciplines who are users of Research Gate and the present study examined various platforms such as Academia.edu, Research Gate, Linkedin, Impact story, ORCID, and Mendeley.

Alasfor (2016) investigated the influence of virtual environmental characteristics such as collaboration, communication, and resource sharing on social media adoption of university instructors in Saudi Arabia and Pakistan. The research design of the study was a survey research design and the population of the study was 65,000 university instructors

in Saudi Arabia and Pakistan. The sampled population was 382. Data were collected by the use of a questionnaire.

The study adopted Social Constructivist Paradigm and Technology Acceptance Model. Descriptive and Logistic regression were used in analysing the data. Findings from the study revealed that the majority of university instructors used social media in information sharing. The study further revealed that there was a positive relationship between collaboration, communication, resource sharing, and social media use. The major similarities in the study and this one are the variables such as collaboration. The dissimilarities between both studies are the theories adopted for the studies. The present study adopted the Uses and Gratification Theory and the former used Social Constructivist Paradigm and Technology Acceptance Model.

Gruzd *et al.* (2012) examined the role of social media in the research practices of faculty using the Unified Theory of Acceptance and use of Technology model. The study adopted survey research design. The population of the study consisted of 50 conference participants of the American Society of Information Science and Technology. Data for the study were collected by the use of the interview. The data were analysed by the use of descriptive and inferential statistics. The results of the study indicated that there was a significant association between performance expectancy and the use of social media for research-related activities. The results also showed that there was no significant relationship between facilitating conditions and the use of academic social media by respondents.

The study recommended that Unified Theory and use of Technology should be expanded to accommodate various scholarly practices. The similarity between the study and the

current one is the adoption of Unified Theory and use of Technology. The dissimilarity between both studies is that the present study used questionnaire to collect data while the other study used interview.

Cha (2010) carried out a study on the factors affecting the frequency and amount of social networking sites used and the motivations, perceptions, and privacy concerns of users. The purpose of the study was to find out the frequency people use social media. The study adopted the Technology Acceptance Model and Uses and Gratification Theory. The study was carried out using survey research. The sampled population was 251 scholars from Southeastern University.

Data were collected and analysed by use of questionnaires, descriptive and inferential statistics respectively. The study found out there was a significant difference in the frequency of use of social media as a result of interpersonal utility, perceived ease of use, privacy concerns, and age. The similarity between this and current study is that both studies adopted survey research design. The difference is that the population of the study was not stated, only the sampled population.

2.11 Summary of Literature Reviewed

In this chapter, an effort has been made to review as much as possible literature related to this study. The researcher consulted various information resources such as academic social media sites, online databases, Internet sources, textbooks, conference proceedings, and seminars/workshop papers, journal articles, national and international.

The literature review covered the following concept: research, research activities, social media, academic social media, academic social media use, and library and information

science educators. Theories used for framework were reviewed. These include: Diffusion of Innovation Theory, Technology Acceptance Theory, Uses and Gratification Theory and the Unified Theory of Adoption and Use of Technology. A review of empirical studies done on the various objectives of the study was carried out.

The review of the influence of academic social media use on research activities of LIS educators in universities in Nigeria revealed several insights such as (1) The main purpose of conducting research in the field of LIS is to proffer solutions to problems affecting the profession and the society. (2) Research activities of LIS educators include information gathering, collaboration, dissemination of research findings, and measuring research impact. (3) There are specific social media platforms that were designed to promote research activities and they are referred to as Academic social media (ASM). (4) ASM can be used to enhance research activities such as information gathering activities, collaboration, dissemination of research findings, and measuring research impact. (5) There are various ASM that can be utilised by LIS educators in enhancing their research activities such as Google Scholar, Research gate, Academia.edu, Linkedin, Mendeley, ORCID, Impact story, and Method space. (6) Factors such as performance expectancy, social influence, and facilitating conditions could influence ASM use in enhancing research activities.

It is pertinent from the review that very few studies exist on the use of academic social media in enhancing the research activities of LIS educators. From the studies conducted and to the best of the researcher's knowledge there seems to be no study carried out on the influence of ASM use in research activities of LIS educators in universities in Nigeria.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

Descriptive survey research design was used for this study. Martin (2020) viewed descriptive survey research design as a type of research that is utilised to gain an understanding of an underlying research problem by seeking opinions and motivation from people. The design therefore, was considered appropriate for the study because it sought information on the views and opinions of LIS educators in universities in Nigeria on the influence of ASM use on their research activities. The design was also considered appropriate for the study for it enabled the researcher to use a sample to represent the entire population of the study.

3.2 Population of the Study

The population of the study consisted of 348 LIS educators in 37 university-based library schools in Nigeria. The breakdown shows that there were 17 federal, 15 State government-owned universities, and 5 privately owned universities in Nigeria offering the LIS programme. Adopting LIS educators in a study of this nature arises from the fact that one of the objectives of establishing a LIS Department in universities is to conduct research by LIS educators on issues relating to librarianship as a profession. To achieve this objective, LIS educators need to adopt and use ASM to enhance their research activities. The Table for the population of the study is shown in Appendix A.

3.3 Sample and Sampling Technique

The sample size for this study was 258 LIS educators from 28 federal, state, and private universities offering Library and Information Science in Nigeria. A multistage sampling

process was used for the study. This choice of multi-stage sampling process was because the process of sampling was carried out in stages using the most appropriate method at each stage. In carrying out the sampling, the researcher in the first instance adopted the cluster sampling technique and divided the various library schools in Nigerian universities into subgroups or clusters based on the six geo-political zones they are situated in Nigeria (North-central, North-east, North-west, South-east, South-south, and South-west). The choice of cluster sampling technique was because the population of the study covers a very large geographical area. In the second stage, the researcher adopted a random sampling technique through a lottery method to select 80% of university-based library schools situated in each geo-political zone summing up to 28 library schools. The researcher selected 80% of universities from each zone due to inadequate funds and time to study all the universities offering LIS in Nigeria. The third stage was a total enumeration of LIS educators working in the selected universities amounting to a total of 258 LIS educators. The choice of simple random sampling is to provide an equal chance for all the library schools in universities in Nigeria located in various geopolitical zones of being included in the sample of the study. The selected universities are shown in Table 3.1.

Table 3.1: Sample of the Study

S/N	Geo-Political Zones/Universities	Total Number of LIS Educators
	North Central	
1	Benue State University, Makurdi, Benue State	7
2	Federal University Lafia, Nassarawa State	6
3	University of Abuja, FCT	11
4	University of Ilorin, Kwara State	13
	North East	
1	Abubakar Tafawa Balewa University Bauchi, Bauchi State	8
2	Modibbo Adamawa University of Technology, Yola, Adamawa State	10
	North West	
1	Ahmadu Bello University Zaria, Kaduna State	19
2	Yusuf Maitama Sule University Kano, Kano State	5
3	Kebbi State University of Science and Technology, Aliero, Kebbi State	8
4	Umaru Musa Yaradua University, Katsina Katsina State	12
	South East	
1	Abia State University, Uturu, Abia State	12
2	Ebonyi State University, Abakaliki, Ebonyi State	4
3	Enugu State University of Science and Technology, Enugu, Enugu State	4
4	Madonna University, Okija, Anambra State	4
5	The Michael Okpara University of Agriculture, Umudike, Abia State	10
6	The University of Nigeria, Nsukka, Enugu State	16
	South-South	
1	Benson Idahosa University, Benin, Edo State	3
2	Delta State University, Abraka, Delta State	13
3	Ignatius Ajuru, University of Education, Rumuolumeni, Port Harcourt, Rivers State	5
4	Niger Delta University, Wilberforce Island, Yenogoa, Bayelsa State	8
5	University of Benin, Edo State	6
6	University of Calabar, Calabar, Cross River State	28
7	The University of Port Harcourt, Port Harcourt, Rivers State	7
8	University of Uyo, Akwa Ibom State	7
	South West	
1	Adeleke University, Ede, Osun State	7
2	AjayiCrowther University, Oyo, Oyo State	5
3	The Tai Solarin University of Education, Ijagun, Ogun State	4
4	University of Ibadan, Ibadan, Oyo State	16
Total	**28**	**258**

3.4 Instrument for Data Collection

The instrument for data collection was the questionnaire. The choice of questionnaire for this study was because most people are familiar with a questionnaire and generally does not make people apprehensive. The questionnaire was tagged: Academic Social Media Use on Research Activities of Library and Information Science Educators (ASMURALISE). The questionnaire used 5 point scales to collect data from the prospective respondents for the study. The point scale included symmetrical response options ranging from Daily, Weekly, Bi-Weekly, Monthly, Once in a While, Very Highly Used, Highly Used , Moderately Used, Lowly Used, Not Used, Very High, High, Low, Very Low, Never, Always, Often, Sometimes, Rarely, Strongly Agree, Agree, Agree to Some Extent, Disagree, and Strongly Disagree. The questionnaire is in two parts. Part A had 6 items and sought personal data about the respondents. Part B had 73 items organised under 7 sections (1-7). Section 1 with 8 items sought information on the types of ASM platforms used in enhancing research activities. Section 2 also with 8 items sought the frequency of utilisation of ASM. Section 3 with 12 items elicited for information on the extent of use of ASM in enhancing research information-gathering activities. Section 4 contained 11items and inquired into the level of use of ASM in research collaborative activities. Section 5 with 7 items inquired into the extent of use of ASM in disseminating research activities. Section 6 consisted of 8 items elicited information on the frequency with which LIS educators measures their research impact in ASM platforms. Section 7 with 19 items elicited information on the factors that influenced the use of ASM.

3.5 Validation of the Data Collection Instrument

The validity of the questionnaire was determined by three lecturers from the Department of LIS and two lecturers from the Department of Science Education, Federal University of Technology, Minna. They were requested to verify the adequacy, language, appropriateness, and comprehensiveness of the items concerning the objectives of the study, research questions, and hypotheses. To facilitate the validation, copies of the objectives of the study, research questions, and hypotheses were attached to the questionnaire. During the process of validation, some of the questions were modified, while some were expunged. Their criticisms and comments were used to improve the questionnaire.

3.6 Reliability of Data Collection Instrument

The questionnaire was pilot -tested using a sample of 47 LIS educators drawn from the Federal University of Technology Minna, Ambrose Alli University Ekpoma and Babcock University Illisan Remo These universities were selected because they were not part of sampled universities of the study. Thirty copies of the distributed questionnaire distributed were retrieved and the scores obtained from the pilot test of the instrument were subjected to reliability analysis using the Cronbach Alpha method to determine the internal consistency of the instrument. The instrument had the following alpha scores. Section one = 0.708, Section two = 0.917, Section three = 0.885, Section four = 0.823, Section five = 0.924. Section six = 0.978, Section 7 = 0.642, 0.742, and 0.611.

3.7 Method of Data Collection

The researcher administered copies of the questionnaire to the respondents through their emails. A web version of the instrument was created using Google form. The Uniform Resource Locator (URL) of the online questionnaire was sent to respondents through their email addresses. The email addresses and telephone numbers of respondents were obtained from the 2020 Directory of the National Association of LIS education members and the List of LIS schools in Nigeria. The researcher in the first instance made telephone calls to members inviting them to participate in the study. A period of three months was used in collecting the data. The researcher used an online survey to collect data because it was cost-effective and more convenient especially because of the pandemic which discourages physical meetings. A total of 258 copies of the questionnaire were sent to LIS educators in the sampled universities in Nigeria. The response rate showed that 190 (74%) copies of the questionnaire were correctly filled and received.

3.8 Method of Data Analysis

Descriptive and Inferential statistical analysis methods were adopted for the study. Descriptive statistical analysis was adopted for the study to allow the researcher to describe and summarise the results obtained from the analysis of data. Descriptive statistical tools such as frequency counts, mean, tables, and graphs were adopted to answer research questions. For questions with likert scale responses, a midpoint mean value of 3.0 and above was accepted as positive response. The values that were less than 3.0 were considered as negative and therefore rejected. 50% and above was the benchmark that was used for responses whose values were based on percentages. The

study further used Spearman’s and Kruskal-Wallis's inferential statistical tool to test the null hypotheses at a 0.05 level of significance.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Respondents Demographic Profile

The frequency distribution of respondents' demographic profiles such as age, work experience, qualification, rank, and gender are presented in Table 4.1

Table 4.1: Frequency Distribution of the Respondents' Demographic Profile

Variable	Category	Frequency	Percentage (%)
Age	31-40years	74	38.9
	41-50years	66	34.8
	51-60years	30	15.8
	20-30years	12	6.3
	61 & above	8	4.2
Work Experience	1-5years	35	18.4
	6- 10years	57	30.0
	11-15years	45	23.7
	16-20years	18	9.5
	21-25years	18	9,5
	26-30years	7	3.6
	31-& above	10	5.3
Qualification	Bachelor Degree	9	4.7
	Master Degree	91	47.9
	PhD Degree	90	47.4
Rank	Lecturer 11	60	31.5
	Lecturer 1	36	18.9
	Senior Lecturer	35	18.4
	Assistant Lecturer	33	17.4
	Graduate Assistant	10	5.3
	Professor	10	5.3
	Associate Professor	6	3.2
Gender	Male	122	64.2
	Female	68	35.8

Table 4.1 shows that in terms of age, 74 (38.9%) respondents were in their middle ages. This is followed by 66 (34.8%) of those who were in 41-50 years. The table revealed further that the age ranges of 51-60 years, 20-30years, and 61 above respondents were

30(15.8%), 12(6.3%), and 8(4.2%) respectively. As regard qualifications, 90(47 %) of respondents' highest qualification attainment was PhD. The data also showed that 91(48%) of the respondents have obtained their master degrees while 9(5%) of the respondents had bachelor degrees.

For work experience, the data revealed that the respondents had the following work experiences: 1-5 years 35(18.4%), 6-10years 57(30.0%), 11-15years 45(23.7%), 16-20years 18(9.5%), 21-25years 18(9.5%), 26-30years 7(3.6%) and 31years and above 10(5.3%).

As regards rank, the data indicated that the highest percentage of faculty members who participated in the study were Graduate Assistant 10(5.3%). The data further revealed that the other respondents had the following ranks: Assistant Lecturer, 33 (17.4%), Lecturer 11 60(31.5%), Lecturer 1 36(18.9%), Senior Lecturer 35(18.4%), Associate Professor 6(3.2%) and Professor 10(5.3%)

The data on gender revealed that a larger proportion of LIS educators in universities in Nigeria who participated in the study were men 122(64.2%) compared to women who were 68(35.8%).

4.2 Research Question One: What are the types of academic social media used by library and information science educators in universities in Nigeria?

In addressing this research question, LIS educators in universities in Nigeria were required to identify the various types of academic social media they utilised in enhancing their research activities. The responses are presented in Table 4.2.

Table 4.2: Types of Academic Social Media used by Library and Information Science Educators in Universities in Nigeria

S/N	Statement	Frequency	Percentages%
1	Google scholar	144	76
2	Research gate	140	74
3	Academia.edu	121	64
4	Linkedin	110	58
5	Open Researcher and Contributor Identifier (ORCID)	66	35
6	Mendeley	59	31
7	Impact story	21	11
8	Methodspace	18	9

Table 4.2 revealed that GoogleScholar 144 (76%), Research gate 144 (74%), Academia.edu 121 (64%), and Linkedin 121 (58%) were the ASM platforms utilized by respondents in enhancing their research activities. The findings also showed that majority of the respondents do not use ORCID 66 (35%), Mendeley 59(31%), Impact story 21(11%) and Method Space 18(9%).

4.3 Research Question Two: What is the frequency of use of ASM by LIS educators in universities in Nigeria?

To answer the research question 2, respondents were asked to indicate the frequency of use of ASM in enhancing their research activities. The responses to the research question were presented in Table 4.3.

Table 4.3: Frequency of the Use of ASM

S/N	Statement	Daily	Weekly	Bi-weekly	Monthly	Once in a while
1	Google Scholar	9(5%)	70(37%)	21(11%)	12(6%)	9(5%)
2	Research gate	19(10%)	79(42%)	22(12%)	13(7%)	7(4%)
3	Academia.edu	9(5%)	70(37%)	21(11%)	12(6%)	9(5%)
4	Linkedin	2(6%)	50(26%)	24(13%)	10(5%)	15(9%)
5	ORCID	2(3%)	27(14%)	18(9%)	4(2%)	11(6%)
6	Mendeley	11(4%)	22(12%)	12(6%)	10(5%)	7(4%)
7	Impact Story	22(1%)	9(5%)	5(3%)	1(1%)	4(2%)
8	Methodspace	6(1%)	7(4%)	5(3%)	1(1%)	3(2%)

Data in Table 4.3 revealed that the frequency of use of the various academic social media platforms by respondents was low. The findings in Table 4.3 revealed that Research gate had the highest frequency of use for 79(42%) of respondents indicated that they utilised the platform weekly. This was followed by Google Scholar 70(37%) and Academia.edu 70(37%) which they also specified that they used weekly.

4.4 Research Question Three: What is the extent of the use of ASM in the research information-gathering activities of LIS educators in universities in Nigeria?

The responses on the extent of use of ASM in the research information-gathering activities of respondents are presented in Table 4.4.

Table 4.4: Extent of Use of ASM in Research Information Gathering Activities

S/N	Statement	Very Highly Used 5	Highly Used 4	Moderately Used 3	Lowly Used 2	Not Used 1	Mean	FX	Rank	Decision
1	Reviewing research literature	85	55	36	9	5	4.08	776	1	Highly Used
2	Identifying research opportunities	54	80	40	13	3	3.89	736	2	Moderately Used
3	Keeping up with fellow users' research interest	37	98	30	20	5	3.75	712	3	Moderately Used
4	Identifying experts in my field	40	84	41	17	8	3.69	701	4	Moderately Used
5	Following topics, the community is paying attention to	30	87	47	21	5	3.61	686	5	Moderately Used
6	Keeping up to date on new research trends	53	49	43	42	3	3.56	677	6	Moderately Used
7	Identifying upcoming seminars, conferences, workshops and webinars	28	80	50	24	8	3.51	666	7	Moderately Used
8	Identifying grant opportunities	40	45	54	33	18	3.29	626	8	Moderately Used
9	Find collaborators for research projects and groups	21	69	51	31	18	3.23	596	9	Moderately Used
10	Identifying potential publication outlets	26	29	76	54	5	3.09	587	10	Moderately Used
11	Collecting primary data such as administration of questionnaire, interview schedule and observation	13	42	40	76	19	2.76	524	11	Lowly Used
12	Identifying yet unpublished works	10	40	47	74	19	2.73	518	12	Lowly Used

Table 4.4 showed that respondents highly utilised ASM in reviewing research literature (mean = 4.08). Furthermore, data in Table 4.4 indicated the extent of use of ASM in collecting primary data such as administration of the questionnaire, interview schedule and observation (mean = 2.76) and identifying yet unpublished works (mean = 2.73) was low.

4.5 Research Question Four: What is the level of use of ASM in the research collaborative activities of LIS educators in universities in Nigeria?

To answer research question 4, respondents were requested to indicate the level of use of ASM in enhancing their research collaborative activities. The responses are presented in Table 4.5.

Table 4.5: Level of Use of ASM in Research Collaborative Activities

S/N	Statement	Very High 5	High 4	Low 3	Very low 2	Never 1	Mean	FX	Rank	Decision
	Research Information Sharing									
1	Connecting with people who have a similar research interest	36	70	60	17	7	3.58	681	1	High
2	Co-authoring with colleagues within Nigeria	21	77	61	28	3	3.45	655	2	High
3	Seek advice from fellow colleagues	24	74	54	34	4	3.42	650	3	High
4	Sharing my research findings	18	51	86	33	2	3.26	620	4	High
5	Belonging to a research group	24	59	53	45	9	3.23	614	5	High
6	Participate in group discussions	24	52	59	38	17	3.15	598	6	High
7	Sharing information on new research trends	17	29	35	88	21	2.65	503	7	Low
8	Sharing data	19	31	38	41	61	2.51	476	8	Low
9	Co-authoring with colleagues outside Nigeria	9	4	63	74	40	2.31	438	9	Low
10	Co-authoring with colleagues in other disciplines	10	21	25	68	66	2.16	411	10	Low
11	Uploading my manuscript for other colleagues to assess	2	7	48	35	98	1.74	330	11	Very low

Table 4.5 revealed that there was a high level of use of ASM by respondents for connecting with people who had similar research interests (mean=3.58). The data further revealed that the level of use of ASM by respondents for uploading manuscripts for other

colleagues to assess was very low. (mean=1.74), In addition, the data revealed that the level of use of ASM in co-authoring with colleagues outside Nigeria (mean=2.31) and co-authoring with colleagues in other disciplines (mean=2.16) was low.

4.6 Research Question Five: To what extent do LIS educators in universities in Nigeria disseminate their research findings using ASM?

To answer research question 5 respondents were requested to indicate the extent to which they disseminate their research findings using academic social media. Data are presented in Table 4.6.

Table 4.6: Extent of Dissemination of Research Findings

S/N	Statement	Very High 5	High 4	Moderate 3	Low 2	Not Used 1	Mean	FX	Rank	Decision
1	Uploading of abstracts of articles (journal articles, conference proceedings, and books)	40	38	58	41	13	3.27	621	1	Moderate
2	Uploading of full-text articles (journal articles, conference proceedings, and books)	6	15	69	76	24	2.49	473	2	Low
3	Uploading working papers	10	14	35	75	56	2.19	417	3	Low
4	Sharing scholarly presentations such as posters and slides	12	6	29	89	54	2.12	403	4	Low
5	Sharing links of published articles	8	11	27	86	58	2.08	395	5	Low
6	Sharing data underlining my research	15	7	36	47	85	2.05	390	6	Low
7	Sharing software codes and technology applications utilised during the research process	10	14	33	46	87	2.02	384	7	Low

Table 4.6: reveals that the majority of the respondents (mean=3.27) moderately uploaded their abstracts on ASM. The data also revealed that the sharing software of codes and technology applications. utilised during the research process by respondents using ASM platforms was low (mean=2.02).

4.7 Research Question Six: At What frequency do LIS educators measure their research impact through academic social media?

To provide answers to this research question, the respondents were requested to identify the frequency they measure their research impact through ASM. The responses are presented in Table 4.7.

S/N	Statement	Always 5	Often 4	Sometimes 3	Rarely 2	Never 1	Mean	FX	Rank	Decision
1	I search for information on how often my articles are cited	38	63	51	24	14	3.46	657	1	Sometimes
2	I search for information on the frequency of my article view	36	61	50	27	16	3.39	644	2	Sometimes
3	I search for feedbacks related to my work	33	47	57	40	13	3.25	617	3	Sometimes
4	I monitor the number of full test reads of my articles	30	53	61	25	21	3.24	616	4	Sometimes
5	I search for information on researchers who are attracted to my work and the countries they reside	29	47	65	25	24	3.17	602	5	Sometimes
6	I keep track of researchers who are interested in my research	37	43	49	34	27	3.15	599	6	Sometimes
7	I monitor the number of recommendations my articles receive	31	47	48	35	29	3.08	586	7	Sometimes
8	I search for information on the number of bookmarks my articles have received	28	36	55	22	49	2.85	542	8	Rarely

Table 4.7 reveals that the majority of the respondents (mean=3.46) sometimes monitor how often their articles are cited. The data on Table 4.7 further shows that majority of the respondents (mean=2.85) rarely search for information on the number of bookmarks their articles have received.

4.8 Research Question Seven: What factors influence the use of ASM in enhancing the research activities of LIS educators in universities in Nigeria?

To address this research question, respondents were required to indicate the factors that influence their use of academic social media. The data are presented in Tables 4.8.1, 4.8.2 and 4.8.3

Table 4.8.1 Performance expectancy

S/N	Statement	Strongly Agree 5	Agree 4	Agree to Some Extent 3	Disagree 2	Strongly Disagree 1	Mean	FX	Rank	Decision
1	Academic social media will be useful in tracking my scholarly impact	84	87	16	2	1	4.31	819	1	Agree
2	2. Academic social media will be useful in sharing and promoting my research findings	75	100	14	1	0	4.31	819	1	Agree
3	3.Academic social media will be useful in gathering information for my research	70	104	14	1	1	4.27	811	3	Agree
4	4. Academic social media will enhance my collaborative research activities	65	106	19	0	0	4,24	806	4	Agree
5	5. Utilisation of academic social media will improve my research productivity	79	85	17	7	2	4.22	802	5	Agree

From the results in Table 4.8.1 as regard to performance expectation, the data showed that respondents agreed that ASM will be useful in tracking their scholarly impact (mean=4.31) and it will be also useful in sharing and promoting their research findings (mean=4.31

Table 4.8.2 Social influence

S/NO	Statement	Strongly Agree 5	Agree 4	Agree to Some Extent 3	Disagree 2	Strongly Disagree 1	Mean	FX	Rank	Decision
1	My colleagues recommended academic social media utilization	60	83	22	20	5	3.91	743	1	Agree to some extent
2	I utilise academic social media because most of my colleagues also use it	53	76	22	19	20	3.65	693	2	Agree to some extent
3	I became aware of academic social media through a conference/seminar/workshop/webinar I attended	36	91	20	24	19	3.53	671	3	Agree to some extent
4	I received a promotional email from an academic social media platform	35	72	24	39	20	3.33	633	4	Agree to some extent
5	I am obliged by my institution to utilise academic social media platforms	7	14	11	107	51	2.05	389	5	Disagree

The social influence factors as revealed in Table 4.8.2 show that respondents agreed that colleagues recommended the use of ASM (mean=3.91). The findings also revealed that respondents disagreed that they were obliged by their institutions to utilise ASM (mean=2.05)

Table 4.8.3 Facilitating conditions

	Facilitating Conditions	Strongly Agree	Agree	Agree to Some Extent	Disagree	Strongly Disagree	Mean	FX	Rank	Decision
1	I have an electronic device (Android phone, tablet, and a computer	76	86	18	6	4	4.18	794	1	Agree
2	I have the necessary knowledge to use Academic social media tool	86	57	17	21	9	4.0	760	2	Agree
3	I have no health issues such as poor sight and backache	53	63	18	36	20	3.49	663	3	Agree to some extent
4	I have access to a fast internet network	38	45	29	55	23	3.11	590	4	Agree to some extent
5	The privacy and security of one's work is/ are protected in academic social media	31	35	26	68	30	2.84	539	5	Disagree
6	I have regular access to internet data	22	33	29	71	35	2.66	506	6	Disagree
7	I have institutional support to utilise academic social media	8	11	25	91	55	2.08	3.96	7	Disagree
8	I have the time to constantly utilise academic social media	4	7	27	98	54	1.99	379	8	Disagree
9	I have received adequate training on how to use academic social media	5	7	32	81	65	1.98	376	9	Disagree

The results in Table 4.8.3 as regards facilitating conditions show that the majority of the respondents (mean=4.18) agreed that they have electronic devices such as Android phones, tablets, and a computer. The data also revealed that most respondents strongly disagreed that they have received adequate training on how to use ASM (mean=1.98).

4.9 Research Hypotheses

The following null hypotheses were formulated to guide the study.

4.9.1 Research Hypothesis 1: There is no significant difference in the frequency of the use of ASM by LIS educators in universities in Nigeria

The null hypothesis which states that there is no significant difference in the frequency of use of ASM by LIS educators in universities in Nigeria was tested at a 0.5 level of significance using Kruskal-Wallis. The results of the hypothesis testing are presented in Table 4.9

Table 4.9 Research Hypothesis 1: There is no significant difference in the frequency of the use of ASM by LIS educators in universities in Nigeria

Items	N	Median	Ave Rank	Z	Method	DF	H-Value	P-Value
Daily	8	9.00	16.6	-1.07	Not adjusted for ties	4	12.57	0.014
Weekly	8	38.500	31.4	2.94	Adjusted for ties	4	12.62	0.013
Bi-weekly	8	19.500	24.8	1.15				
Monthly	8	10.00	15.3	-1.40				
Once ina while	8	8.00	14.5	-1.62				
Overall	40		20.5					

Table 4.9 shows the result of the Kruskal-Wallis test to determine if there is a significant difference in the frequency of use of ASM. In these results, the sample estimates of the medians for the three groups are (9.00, 38.500,19.500, 10.00, and 8.00). The null hypothesis states that the population medians for these groups are all

equal. However, if both p-values are less than the significance level of 0.05, you reject the null hypothesis and conclude that there is a significant difference in the frequency of the use of academic social media by LIS educators in universities in Nigeria. The hypothesis was therefore rejected.

4.9.2 Hypothesis 2: There is no significant correlation between performance expectancy and the types of ASM used by LIS educators in universities in Nigeria

The null hypothesis which states that there is no significant correlation between performance expectancy and the types of ASM used by LIS educators in universities in Nigeria was tested at a 0.5 level of significance using spearman. The results of the hypothesis testing are presented in Table 4.10.

Table 4.10: Research Hypothesis 2: There is no significant correlation between performance expectancy and the types of ASM used by LIS educators in universities in Nigeria

Variables	N	Spearman r	P-value	A	Decision
Types of academic social media	190	0.9702	0.0007	0.05	Significant; we reject the null hypothesis
Performance Expectancy	190				

From Table 4.10, the Spearman correlation coefficient r is 0.9702, which means the relationship is positive and strong. This implies that there is a positive and strong correlation between performance expectancy and the types of academic social media used by LIS educators in universities in Nigeria in enhancing their research activities. More so, the p-value is 0.0007 which is less than the level of significance of 0.05(5%), We therefore reject hypothesis 2 and conclude that there is a significant correlation between

performance expectancy and the types of ASM used by LIS educators in universities in Nigeria.

4.9.3 Hypothesis 3: There is no significant correlation between social influence and the use of ASM in research collaborative activities

The null hypothesis which states that there is no significant correlation between social influence and the use of ASM in research collaborative activities was tested at a 0.5 level of significance using spearman. The results of the hypotheses testing are presented in Table 4.11

Table 4.11 Research Hypothesis 3: There is no significant correlation between social influence and the use of ASM in research collaborative activities

Variables	N	Spearman r	P-value	A	Decision
Research Collaborative Activities	190	0.7386	0.0127	0.05	Significant; we reject the null hypothesis
Social Influence	190				

From Table 4.11, the Spearman correlation coefficient r is 0.7386, which means the correlation is positive and strong. This implies that there is a positive and strong correlation between social influence and the use of ASM in research collaborative activities. More so, the p-value is 0.0127 which is less than the level of significance of 0.05 (5%), we therefore reject hypothesis 3 and conclude that there is a significant correlation between social influence and the use of ASM in research collaborative activities.

4.9.4 Hypothesis 4: There is no significant correlation between facilitating conditions and the use of ASM in disseminating research findings

The null hypothesis which states that there is no significant correlation between facilitating conditions and the use of ASM in disseminating research findings was tested

at a 0.5 level of significance using spearman. The results of the hypotheses testing are presented in Table 4.12.

Table 4.12 Research Hypothesis 4: There is no significant correlation between facilitating conditions and the use of academic social media in disseminating research findings

Variables	N	Spearman r	P-value	A	Decision
Disseminating of Research Findings	190	0.9958	0.0000	0.05	Significant; we reject the null hypothesis
Facilitating Conditions	190				

From Table 4.12, the Spearman correlation coefficient r is 0.9958, which means the correlation is positive and strong. This implies that there is a positive and strong correlation between facilitating conditions and the use of academic social media in disseminating research findings. More so, the p-value is 0.0000which is less than the level of significance of 0.05(5%). We therefore reject the hypothesis and conclude that there is a significant correlation between facilitating conditions and the use of academic social media in disseminating research findings.

4.9.5 Research Hypothesis 5: Facilitating conditions has no significant influence on the frequency of measuring research impact by the use of ASM

The null hypothesis which states that facilitating conditions have no significant influence on the frequency of measuring research impact by the use of ASM was tested at a 0.5 level of significance using spearman. The results of the hypothesis testing are presented in Table 4.13.

Table 4.13 Research Hypothesis 5: Facilitating conditions has no significant influence on the frequency of measuring research impact by the use of academic social media

Variables	N	Spearman r	P-value	A	Decision
Frequency of Measuring Research Impact	190	1.00	0.0000	0.05	Significant; we reject the null hypothesis
Facilitating Conditions	190				

From Table 4.13, the Spearman correlation coefficient r is 1.00, which means the correlation is positive and strong. This implies that there is a positive and strong correlation between facilitating conditions and the use of ASM in measuring research impact. More so, the p-value is 0.0000which is less than the level of significance 0.05(5%). We therefore reject the hypothesis and conclude that there is a significant correlation between facilitating conditions and the frequency of measuring research impact by the use of ASM.

4.9.6 Research Hypothesis 6: There is no significant relationship between social influence and the use of ASM in research information gathering activities

The null hypothesis which states that there is no significant relationship between social influence and the use of ASM in research information gathering activities were tested at a 0.5 level of significance using spearman. The results of the hypothesis testing are presented in Table 4.14.

Table 4.14 Research Hypothesis 6: There is no significant relationship between social influence and the use of ASM in research information gathering activities

Variables	N	Spearman r	P-value	A	Decision
Social Influence	190	0.9021	0.0008	0.05	Significant; we reject the null hypothesis
Research Information-Gathering	190				

From Table 4.14, the Spearman correlation coefficient r is 0.9021, which means the correlation is positive and strong. This implies that there is a positive and strong correlation between social influence and the use of ASM in research information-gathering activities. More so, the p-value is 0.0008 which is less than the level of significance of 0.05(5%). We therefore reject hypothesis and conclude that there is a significant relationship between social influence and the use of ASM in research information-gathering activities.

4.10 Summary of Findings

The following findings could be deduced from the study.

1. Google Scholar, Research gate, Academia.edu, and Linkedin were the ASM utilised by respondents in enhancing their research activities.
2. On the frequency of use, weekly use of Research gate had the highest percentage.
3. Respondents utilised ASM for reviewing research literature. It was also observed from the study that the use of ASM for collecting primary data and identifying unpublished work was low.
4. ASM was utilised by respondents for connecting with people who had similar research interests and the use of ASM for uploading manuscripts for other

colleagues to assess was very low. The study equally revealed the use of ASM for co-authoring with people outside Nigeria and in other disciplines was low.

5. The majority of the respondents moderately uploaded abstracts of their articles on ASM platforms.
6. The findings revealed that the majority of the respondents sometimes monitor the citations their articles have received.
7. On performance expectancy, as one of the factors that influence ASM use, respondents agreed that ASM will be useful in tracking their scholarly impact and also useful in sharing and promoting their research findings. As regards social influence, respondents agreed that ASM use was influenced mostly by the recommendations of colleagues and respondents disagreed that they were obliged by their institutions to utilise academic social media. As for facilitating conditions, respondents agreed that they have electronic devices to utilise academic social media but disagreed they have received adequate trainings on how to effectively use it in enhancing their research activities.
8. There is significant difference in the frequency of use of ASM by LIS educators in universities in Nigeria.
9. There is a significant correlation between performance expectancy and the types of ASM used by LIS educators in universities in Nigeria.
10. There is a significant correlation between social influence and the use of ASM in research collaborative activities.
11. There is a significant correlation between facilitating conditions and the use of ASM in disseminating research findings.

12. Facilitating conditions have a significant influence on the frequency of measuring research impact by the use of ASM.
13. There is a significant relationship between social influence and the use of ASM in research information-gathering activities.

4.11 Discussion of Findings

4.11.1 Types of academic social media (ASM) used

Table 4.2 revealed that Google Scholar was the most used ASM platform by respondents. This may be because it is more familiar to the respondents and a user does not need to register to have access to their information resources. It is also relatively simple, fast, and free to use. It was also discovered from the findings that Method space was the least utilised academic social media platform. The low use of Methodspace by the majority of the respondents may be attributed to a lack of awareness of the platform and the services it provides. Method space provides a forum for researchers to come together from various disciplines to discuss and advise one another on various aspects of research, especially research methodology. These findings are in disagreement with the findings of Collins *et al.* (2016) who in their study found out that Linkedin was the most widely used platform by scientists in the United State of America, the United Kingdom, New Zealand, Australia, and Canada.

4.11.2 Frequency of use of academic social media (ASM)

Table 4.3 shows that the frequency of use of the various ASM platforms was low. The data in the Table 4.3, revealed that Research gate was the most frequently used platform for weekly use of the platform had the highest frequency. The low level of the use of ASM might be as a result of a lack of time due to a heavy workload. As lecturers, they

also engage in other academic activities other than research such as teaching, community services, department and faculty responsibilities. Furthermore, the low usage of academic social media might also be a result of low research activities among respondents. Yan *et al.* (2020) in their study observed that research institutions in the United States which engage in higher research activities level tend to use academic social media compared to institutions with low research activities. The low frequency of use of ASM could also be attributed to inadequate use of ASM in enhancing the research activities of respondents. These findings align with the findings of Nadex and Borrego (2013) who found out that the frequency of use of social media for academic purposes is low among users in twelve Catalan universities, Spain.

4.11.3 Extent of use of academic social media in research information gathering activities

Table 4.4 shows that reviewing research literature was the major research information gathering activity of respondents in their use of ASM platforms. Reviewing research literature may have obtained the highest mean rating because respondents may likely during this process obtain first-hand information on the research area they are about to investigate. Furthermore, data in Table 4.4 indicated that respondents did not use academic social media in identifying yet unpublished works. It is commendable that library and information science educators in Nigerian universities have seized the opportunity to access various information resources provided by ASM platforms. According to Academia.edu (2022), 40 million papers have been deposited by users on their platform. Most ASM platforms provide free access to various types of research outputs. This is particularly important to LIS educators who may not have access to current information resources as a result of a lack of accessibility to various databases. \

ASM also enables users to have access to firsthand information in answering research questions, test hypotheses, and theories. It also helps in identifying the gap that will likely be filled by a researcher. The low use of ASM in identifying unpublished work as this study found, maybe because respondents did not find it necessary to identify unpublished works. After all, some were not pair reviewed. A researcher must identify unpublished works alongside published works. Several research outputs are not published but contain very relevant information. Such unpublished works include preprints, presentations, thesis and dissertations, and conference papers.

It must also be emphasised that unpublished works may sometimes be difficult to find from available information sources because they are relatively few and widely spread geographically in various organisations and institutions. This study is not in line with the findings of Chisenga *et al.* (2013) who discovered that agricultural researchers in Ghana and Kenya use social media in identifying research opportunities and finding researchers to collaborate with in carrying out research projects.

4.11.4 Level of use of academic social media in research collaborative activities

Table 4.5 revealed that ASM was actively used by respondents for connecting with people who had similar research interests. The data further revealed that uploading manuscripts for other colleagues to assess, co-authoring with colleagues outside Nigeria and co-authoring with colleagues in other disciplines had the lowest mean score. This majority of the respondents may not have uploaded their manuscripts for other colleagues to assess may be as a result of fear of other people plagiarising their work. Scholars may likely not plagiarise peoples' works that are sent to them for assessment through

academic social media because of the consequences; such as paper withdrawals and loss of author's credibility and reputation.

It is worthy of note that most respondents have been able to utilise academic social media to connect with fellow researchers. This might be because most academic social media platforms provide a forum for researchers to come together and share a common interest. The benefits of connecting with other researchers across the globe include: it brings about recognition, engagement with various audiences such as experts, fellow researchers, policymakers, funding agencies; promotion of one's expertise and brings about exposure as a researcher. The data revealed further that most respondents have not left their comfort zones as they do not use the opportunity provided by ASM to co-author with colleagues outside Nigeria and in other disciplines.

Furthermore, respondents may not have co-authored with colleagues in other disciplines and countries because they have not contacted fellow researchers in these academic social media platforms to participate in collaborative research. Modern research is now complex and demands new skills that no single person can acquire. If library and information educators collaborate with other researchers outside their field or country there is a greater probability that they will be able to undergo bigger projects that might result in the improvement of LIS education in Nigeria, Moreover, when LIS educators participate in collaborative research it will provide them with opportunities to learn various approaches to research from other disciplines and countries which they might apply to existing problems which will lead to innovation. These findings corroborate the findings of Alabi *et al.* (2014) who remarked that agricultural scientists in South West Nigeria use social media to connect with their professional colleagues in the agricultural industry.

4.11.5 Extent of dissemination of research findings using academic social media

Table 4.6: revealed that the majority of the respondents uploaded their abstracts on ASM. Abstracts of articles from journals, books, and conference proceedings may have been the most shared research output by respondents as a result of fear of plagiarism and intellectual property rights. The data further revealed that most respondents did not share data underlying their research. This may be a result of concerns that other researchers may use the data outside the original purpose of the research. Secondly, respondents may be apprehensive that they may not be acknowledged when their data is used by fellow researchers. The data also revealed that generally, respondents did not disseminate their research findings through ASM.

It must be emphasised that respondents must act like businessmen and promote their contribution to knowledge to a wider audience through ASM platforms. Research findings can only be used when stakeholders are aware of them. This is inconsistent with the findings of Tai and Pieterse (2017) who found out that faculty members in Israel do not upload their abstracts on ASM.

4.11.6 Frequency of measuring research impact through academic social media

Table 4.7 revealed that the majority of the respondents monitor how often their articles are cited by other researchers. Citation counts may have generally been the most frequent method respondents utilised for monitoring their research impact because it was one of the oldest methods of research evaluation. It was also deduced from the findings that respondents do not monitor the number of bookmarks their articles have received. This may be a result of poor utilisation of ASM platforms such as Mendeley which offers social bookmarking services. These findings may also be attributed to inadequate

knowledge on how to utilise social bookmarking tools. These findings are in disagreement with the findings of Adetayo (2021) who found out that private university lecturers in Ogun State do not utilise social media citation tools.

4.11.7 Factors influencing the use of academic social media

From the results of this study presented in Table 4.9 as regard performance expectancy, the data showed that the item that had the highest mean rating was the statement that ASM will be useful in tracking my scholarly impact and sharing and promoting my research findings. It is commendable that LIS educators have a positive attitude towards sharing their research findings and tracking their scholarly impact through ASM. LIS educators must disseminate their research beyond a small cycle.

It is worthy to note that when LIS educators disseminate their research findings to a wider audience, it increases their visibility, attracts potential collaborators, and also maximises the benefits of research within a short period. Although respondents indicated that they had a positive attitude towards sharing their research findings using ASM, this is contrary to the data in Table 4.6. The data in Table 4.6 revealed that respondents do not upload their full-text articles, share links to their published articles, share data, presentations, and working papers. This may be attributed to a lack of skills in how to share research findings on ASM. It may likely be due to a lack of awareness of the types of research outputs that can be shared on ASM platforms. This is contrary to the findings of Al-Aufi and Fulton who discovered that faculty members in humanities and social sciences disciplines at Sultan Qaboos University, Oman had positive performance expectancy towards the use of ASM for collaboration and communicating with peers locally and regionally.

On the social influence factor, colleagues may have recommended ASM use to increase the number of researchers in their network. Although ASM has the potential for massive reach, it still depends on whom a researcher connects or engages with. It was also deduced from the findings that respondents were not obliged by their institutions to utlise academic social media in universities in Nigeria. This may be as a result of a lack of academic social media usage policies. These findings are in agreement with the findings of Mouroner and Fauck (2014) who found out that the managements of German research institutes behave conservatively concerning social media use in their institutes.

The results as regards facilitating conditions show that majority of the respondents agreed that they have electronic devices such as Android phones, tablets, and a computer. Respondents may have these devices because the devices could be used for both their work (research, teaching, and learning) and personal life (communication, source of information, and entertainment). It is worthy of note that LIS educators have these devices because users can only have access to various academic social media through internet technology which can only be accessed through electronic devices. The data also revealed that most respondents indicated that they have not received adequate training on how to use academic social media. This could be because most respondents were not aware of training opportunities in ASM use. Lack of adequate pieces of training on ASM use may lead to limited use by respondents in enhancing their research activities. These findings are in disagreement with the findings of Onuoha *et al.* (2020) who discovered that lack of knowledge was the major factor hindering effective use of social media in enhancing research collaborative activities.

4.11.8 Research Hypothesis 1: There is no significant difference in the frequency of use of academic social media by library and information science educators in universities in Nigeria

Hypothesis one in Table 4.9 showed that there is a significant difference in the frequency of use of ASM by LIS educators in universities in Nigeria. This implies that the frequency of visiting various platforms varies. They likely utilised some platforms more than others. These findings may be attributed to the ease of use and services they provide compared to other platforms. These findings are in agreement with the findings of Cha (2010) who found out that there is a significant difference in the frequency scholars of South-eastern University visits various social media platforms. The hypothesis was rejected.

4.11.9 Research Hypothesis 2: There is no significant correlation between performance expectancy and the types of academic social media used by library and information science educators in universities in Nigeria

Data in Table 4.10 revealed that there is a significant relationship between performance expectancy and the types of ASM used by respondents. These findings imply that if users believe that using ASM when will enhance their research activities they will eventually patronise the platforms. These findings agree with the findings of Ameen *et al.* (2019) who found out that there is a positive relationship between performance expectancy and use of social media by employees of public sectors in United-Arab-Emirate. The hypothesis was also rejected.

4.11.10 Hypothesis 3: There is no significant correlation between social influence and the use of ASM in research collaborative activities of LIS educators in universities in Nigeria

The data in Table 4.11 shows that there is a significant relationship between social influence and the use of ASM in research collaborative activities. These findings imply that LIS educators may utilise ASM in enhancing their research collaborative activities

because of the following reasons: recommendations of its use by colleagues when they find out that other colleagues are using it and when they are mandated by their institution's managements to utilised the platforms. These findings are in agreement with the findings of Meler and Dick (2018) who found out that there is significant relationship between social influence and the use of Research gate an ASM platform by 695 scientists all over the world. This hypothesis was, therefore rejected.

4.11.11 Research Hypothesis 4: There is no significant correlation between facilitating conditions and the use of ASM in disseminating research findings by library and information science educators in universities in Nigeria

Data on Table 4.12 revealed that there is a significant relationship between facilitating conditions and the use of ASM in disseminating research findings. The implication of these findings is that LIS educators use ASM in disseminating and promoting their research findings if certain conditions are met such as availability and speed of internet services, knowledge on how to use ASM and regular trainings on ASM use. These findings are in disagreement with the findings of Gruzd *et al.* (2012) who revealed that there is no significant relationship between facilitating conditions and the use of social media by members of the American Society of Information Science and Technology. This hypothesis is rejected.

4.11.12 Research Hypothesis 5: Facilitating conditions has no significant influence on the frequency of measuring research impact by the use of academic social media

Data on Table 4.13 revealed that there is a positive and strong correlation between facilitating conditions and the use of ASM in measuring research impact. This implies that facilitating conditions such as knowledge on how to utilise academic social media, provision of mobile phones and laptops, lack of privacy issues can positively influence the use of ASM in measuring research impact by LIS educators in universities in Nigeria.

These findings are in agreement with the findings of Mansour (2015) who found that facilitating conditions has a significant relationship with the use of ASM by faculty members of the School of LIS at the College of Basic Education and the Public Authority for Applied Education and Training, Kuwait to measure impact. Therefore, this hypothesis is similarly rejected.

4.11.13 Research Hypothesis 6: There is no significant relationship between social influence and the use of ASM in research information gathering activities

Data in Table 4.14 revealed that there is a positive and strong relationship between social influence and the use of ASM in research information-gathering activities. The implication of these findings implies that users may likely use ASM for gathering information for their research if their colleagues recommend its use or if their colleagues are also using the platforms in research information-gathering activities. These findings align with the findings of Ameen *et al.* (2019) who found out that social influence has a positive relationship with use of online social media platforms in daily tasks such as information acquisitions and user productivity among public sector workers in the United Arab Emirate. The hypothesis is rejected.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Research activities are an essential aspect of research. These research activities help to contribute to the development and advancement of the field and benefit the individual educator, broader academic community and society as a whole. Library and Information Science (LIS) educators engage in various types of research activities, including research information gathering activities, collaboration, and dissemination of research findings and monitoring of research impact

Academic Social Media (ASM) have proved to be a veritable means for enhancing research activities. Based on the findings of the study, the following conclusions are made. Google Scholar, Research gate, Academia.edu, and Linkedin were the ASM most utilised by respondents in enhancing their research activities. Respondents in the study area did not use Methodspace and the frequency of use of ASM was low. However, Research gate was used weekly. The major research information gathering activity carried out by respondents on ASM platforms was reviewing research literature. Based on the findings of the study on research collaborative activities, respondents used ASM to connect with people who had similar research interests but do not utilise it to co-author with colleagues outside Nigeria and in other disciplines.

It was also evident from the study that uploading abstracts of articles was the major method respondents utilised in disseminating their research findings using ASM. In addition, citation counts was the major measuring research impact activity respondents' utilised in ASM. As regard influencing factors, it was evident from the findings of the

study that respondents had a positive performance expectancy towards the use of academic social media in enhancing their research activities especially in sharing their research findings and measuring research impact. As regards social influence, the findings of the study were that respondents used ASM because the platform has been recommended by their colleagues. The findings of the study also showed that respondents were not obliged by their institutions to utilise the platforms. On facilitating conditions, respondents opined that they have electronic devices to access ASM but they have not received adequate training on how to effectively utilise the platforms in enhancing their research activity

The study concludes that ASM has had a significant impact on research activities of LIS educators in universities in Nigeria by facilitating access to information resources, collaboration, dissemination of research findings and measuring research impact. As these platforms continue to evolve, they are likely to play increasingly important roles in shaping the future of research in the field of LIS.

5.2 Recommendations

The following recommendations have been made based on the findings of the study:

1. LIS educators should ensure they utilise various ASM so as to have access to the various services they offer in enhancing research activities.
2. LIS educators should improve their frequency of use of ASM platforms to obtain regular updates of their research activities on the platforms and those of their colleagues all over the globe.
3. LIS educators should endeavour to utilise ASM in collecting primary data especially in the post corona period which encourages virtual meetings.

4. LIS educators should seize the opportunities provided by ASM to circulate their manuscripts to fellow researchers before publication to improve the quality of research they undertake. They should also endeavour to engage with other colleagues in various countries and disciplines for co-authoring.
5. LIS educators in universities in Nigeria should endeavour to upload their full works, working papers, data, scholarly presentations, and software and codes underlying their research on various ASM sites.
6. LIS educators should ensure that they monitor the number of bookmarks their articles have received as part of assessing the research impact of their articles.
7. University administrators should ensure they formulate ASM policies and organise regular trainings among LIS educators in universities in Nigeria.

5.3 Contribution to Knowledge

The study has made significant contributions in the field of library and information science (LIS) by providing empirical evidence on how academic social media has made significant contributions in enhancing research activities of LIS educators in universities in Nigeria.

Some of the key contributions of the study to knowledge are:

1. Collaboration: The study provided insight on the collaborative activities that LIS educators engaged in at ASM platforms such as connecting with colleagues, co-authoring with colleagues and seeking advice from colleagues.
2. Information gathering: The study has provided empirical evidence on the extent LIS educators' utlised ASM platforms to access wealth of research resources.

3. Dissemination of Research: The study provided insight on the Level of use of ASM platforms by LIS educators in sharing their research findings. This can help to increase the visibility of their work and potentially lead to more citations.
4. The research have contributed to the area of measuring of research impact by use of ASM by providing insight on the various methods researchers can use to monitor their research impact.

5.4 Suggestions for Further Studies

Based on the findings of this study, the researcher suggests that further studies should be undertaken on the following areas.

1. The influence of ASM on research activities of faculty members in other disciplines in universities in Nigeria.
2. The influence of ASM on the research productivity of library and information science educators in universities in Nigeria.
3. A comparative study of the use of ASM in enhancing research activities of LIS educators in private, state, and federal universities in Nigeria.
4. A comparative study of the use of social media and ASM in enhancing research activities of LIS educators in universities in Nigeria.

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APPENDIX A

Distribution of the population of the study according to the universities

S/N	Geo-Political Zone	Universities	Total Number of LIS Educators
1	North Central	Benue State University, Makurdi, Benue State	7
2	North Central	Federal University, Lafia, Nassarawa State	6
3	North Central	The Federal University of Technology, Minna, Niger State	21
4	North Central	University of Abuja, Gwagwalada, Abuja	2
5	North Central	The University of Ilorin, Ilorin, Kwara State	13
6	North East	AbubakarTafawaBalewa University, Bauchi, Bauchi State	8
7	North East	Modibbo Adamawa University of Technology, Yola, Adamawa State	10
8	North East	University of Maiduguri, Maiduguri,Borno State	10
9	North West	Ahmadu Bello University, Zaria, Kaduna State	19
10	North West	Bayero University, Kano, Kano State	21
11	North West	Kebbi State University of Science and Technology, Aliero, Kebbi State	8
12	North West	Umaru Musa Yaradua University, Katsina, Katsina State	12
13	North West	Yusuf MaitamaSule University, Kano, Kano State	3
14	South East	Abia State University, Uturu, Abia State	12
15	South East	ChukwumemekaOdumeigu University, Igbariam, Anambra State	3
16	South East	Ebonyi State University, Abakaliki, Ebonyi State	3
17	South East	Enugu State University of Science and Technology, Enugu, Enugu State	4
18	South East	Imo State University, Owerri, Imo State	9
19	South East	Madonna University, OkijaAnambra State	2
20	South East	The Michael Okpara University of Agriculture, Umudike, Abia State	10
21	South East	NnamdiAzikiwe University, Awka, Anambra State	11
22	South East	University of Nigeria Nsukka, Enugu State	16
23	South-South	Ambrose Alli University, Ekpoma, Edo State	10
24	South-South	Benson Idahosa University, Benin City, Edo State	1
25	South-South	Delta State University, Abraka, Delta State	13
26	South-South	Ignatius Ajuru University of Education, Rumuolumeni, Portharcourt, Rivers State	5
27	South-South	Niger Delta University, Wilberforce Island,	8

		Yenogua, Bayelsa State	
28	South-South	Rivers State University, Port Harcourt, Rivers State	10
29	South-South	The University of Benin, Benin, Edo State	6
30	South-South	The University of Calabar, Calabar, Cross River State	28
31	South-South	The University of Port Harcourt, Port Harcourt, Rivers State	7
32	South South	University of Uyo, Uyo, AkwaIbom State	7
33	South West	Adeleke University, Ede, Osun State	7
34	South West	AjayiCrowther University, Oyo State	3
35	South West	Babcock University, Illisan Remo, Ogun State	13
36	South West	Tai Solarin University of Education, Ijagun, Ogun State	4
37	South West	University of Ibadan, Ibadan, Oyo State	16
	Total 37		**348**

Source: Directory of National Association of Library and Information Science Educators Members and List of Library and Information Science Schools in Nigeria (2020)

APPENDIX B

RELIABILTY TEST

INFLUENCE OF ACADEMIC SOCIAL MEDIA ON RESEARCH ACTIVITIES OF LIBRARY AND INFORMATION SCIENCE EDUCATORS IN NIGERIAN UNIVERSITIES

SECTION ONE: TYPES OF ACADEMIC SOCIAL MEDIA PLATFORMS USED IN ENHANCING RESEARCH ACTIVITIES

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excludeda	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.708	.718	8

Item Statistics

	Mean	Std. Deviation	N
Academia.edu	.7667	.43018	30
Researchgate	.4000	.49827	30
Mendeley	.3667	.49013	30
Methodspace	.5000	.50855	30
Impactstory	.5667	.50401	30
Linkedin	.6667	.47946	30
Googlescholar	.3333	.47946	30
Open Researcher and Contributor Identifier (ORCID)	.5333	.50742	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	.517	.333	.767	.433	2.300	.023	8

```
RELIABILITY
  /VARIABLES=B1 B2 B3 B4 B5 B6 B7 B8
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE
  /SUMMARY=MEANS.
```

SECTION TWO: FREQUENCY OF USE OF ACDEMIC SOCIAL MEDIA

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.917	.949	8

Item Statistics

	Mean	Std. Deviation	N
Academia.edu	2.5333	.97320	30
Research gate	2.7333	1.25762	30
Mendeley	1.0667	.25371	30
Methodspace	2.0667	1.22990	30
Impact Story	2.8000	1.39951	30
Linkedin	2.0333	1.15917	30
Google Scholar	3.4333	1.50134	30
Open Researcher and Contributor Identifier (ORCID)	2.6667	1.44636	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.417	1.067	3.433	2.367	3.219	.493	8

SECTION THREE: EXTENT OF USE OF ACADEMIC SOCIAL MEDIA IN ENHANCING RESEARCH INFORMATION GATHERING ACTIVITIES

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.885	.898	12

Item Statistics

	Mean	Std. Deviation	N
Reviewing research literature	3.2333	1.54659	30
Find collaborators for research projects and groups	2.9333	1.41259	30
Identifying research opportunities	3.1667	1.55549	30
Identifying grant opportunities	2.4667	1.54771	30
Identifying upcoming seminars, conferences, workshops and webinars	3.3667	1.58622	30
Keeping up to date on new research trends	2.6667	1.39786	30
Keeping up with fellow users' research interest	2.7000	1.29055	30
Following topics the community is paying attention to	2.8000	1.62735	30

Collecting primary data such as administration of questionnaire, interview schedule and observation	3.8333	1.31525	30
Identifying experts in my field	2.8000	1.56249	30
Identifying potential publication outlets	2.5667	1.30472	30
Identifying yet unpublished works	2.6000	1.65258	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.928	2.467	3.833	1.367	1.554	.161	12

```
RELIABILITY
  /VARIABLES=D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE
  /SUMMARY=MEANS.
```

SECTION FOUR: LEVEL OF USE OF ACADEMIC SOCIAL MEDIA IN RESEARCH COLLABORATIVE ACTIVITIES
Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.823	.870	11

Item Statistics

	Mean	Std. Deviation	N
Seek advice from fellow colleagues	2.7333	1.74066	30
Belonging to a research group	3.5667	1.33089	30
Sharing data	3.0333	1.44993	30
Sharing my research findings	2.4000	1.10172	30
Participate in group discussions	2.9333	1.63861	30
Sharing information on new research trends.	3.1333	1.65536	30
Uploading my manuscript for other colleagues to assess	2.8000	1.34933	30
Connecting with people who have similar research interest	2.4000	1.00344	30
Co-authoring with colleagues within Nigeria	2.5667	1.54659	30
Co-authoring with colleagues outside Nigeria	2.8667	1.56983	30
Co-authoring with colleagues in other disciplines	3.8333	1.31525	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.933	2.400	3.833	1.433	1.597	.203	11

SECTION FIVE: EXTENT OF DISSEMINATION OF RESEARCH FINDINGS

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.924	.944	7

Item Statistics

	Mean	Std. Deviation	N
Uploading of abstracts of articles (journal articles, conference proceedings and books)	3.3000	1.57896	30
Uploading of full text articles (journal articles, conference proceedings, and books).	2.6000	1.27577	30
Sharing links of published articles	2.6667	1.78757	30
Sharing data underlining my research	2.5667	1.61210	30
Sharing software codes and technology applications utilised during the research process	3.2333	1.54659	30
Sharing scholarly presentations such as poster and slides	2.8000	1.34933	30
Uploading working papers	2.5000	1.10641	30
I search for information on the number of bookmarks my articles have received	2.495	1.092	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.810	2.500	3.300	.800	1.320	.107	7

SECTION SIX:MEASUREMENT OF IMPACT

frequency to which you measure your research impact in academic social media platforms

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.978	.990	7

Item Statistics

	Mean	Std. Deviation	N
I search for information on the frequency of my articles views	2.6667	1.60459	30
I search for information on how often my articles are cited	2.8667	1.56983	30
I search for information on researchers who are attracted to my work and the countries they reside	3.5333	1.35782	30
I search for feedbacks related to my work	2.9000	1.39827	30
I search for information on the number of bookmarks my articles have received	2.6000	1.27577	30
I monitor the number of full test reads of my articles	2.7667	1.71572	30

I monitor the number of recommendations my articles receives	1.9333	1.25762	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.752	1.933	3.533	1.600	1.828	.224	7

SECTION SEVEN: FACTORS INFLUENCING THE USE OF ACADEMIC SOCIAL MEDIA

Performance Expectancy influence the use of academic social media
Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha[a]	Cronbach's Alpha Based on Standardized Items[a]	N of Items
.642	.650	5

Item Statistics

	Mean	Std. Deviation	N
Academic social media will be useful in gathering information for my research	2.1333	1.19578	30
Academic social media will enhance my collaborative research activities	3.3333	1.26854	30
Academic social media will be useful in sharing and promoting my research findings	2.1000	1.12495	30
Academic social media will be useful in tracking my scholarly impact	4.0333	1.35146	30

Utilisation of academic social media will improve my research productivity	2.6667	1.44636	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.853	2.100	4.033	1.933	1.921	.686	5

FACTORS INFLUENCING THE USE OF ACADEMIC SOCIAL MEDIA

Social Influence
Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha[a]	Cronbach's Alpha Based on Standardized Items[a]	N of Items
.742	.871	5

Item Statistics

	Mean	Std. Deviation	N
I became aware of academic social media through a conference/seminar/workshop/webinar I attended	2.9667	1.65015	30
I received a promotional email from an academic social media platform	3.1333	1.38298	30
I am obliged by my institution to utilise academic social media platforms	3.7667	1.52414	30
My colleagues recommended academic social media utlilisation	2.6000	1.49943	30
I utilise academic social media because most of my colleagues also use it	2.2000	1.21485	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.933	2.200	3.767	1.567	1.712	.346	5

FACILITATING CONDITIONS FACTORS INFLUENCING THE USE OF ACADEMIC SOCIAL MEDIA PLATFORMS

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha[a]	Cronbach's Alpha Based on Standardized Items[a]	N of Items
.611	.619	9

Item Statistics

	Mean	Std. Deviation	N
I have institutional support to utilise academic social media	2.9333	1.31131	30
I have the necessary knowledge to use academic social media tools	2.2333	1.10433	30
I have received adequate trainings on how to use academic social media	3.7000	1.29055	30
I have the time to constantly utilise academic social media	3.0667	1.48401	30
I have electronic device(Android phone, Tablet and a computer)	3.1667	1.57750	30
I have access to fast internet network	3.4000	1.32873	30
The privacy and security of one's work is/are protected in academic social media platforms	3.3667	1.44993	30

I have regular access to internet data	2.7333	1.61743	30
I have no health issues such as poor sight and backache	2.4000	1.27577	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.000	2.233	3.700	1.467	1.657	.230	9

APPENDIX C

Research Hypothesis 2: There is no significant correlation between performance expectancy and the types of academic social media used

Types of academic social media	Performance Expectancy	Rank (Types of academic social media)	Rank (Performance Expectancy)	d	d^2
144	819	8	7.5	0.5	0.25
140	819	7	7.5	-0.5	0.25
121	811	6	6	0	0
110	806	5	5	0	0
66	802	4	4	0	0
59	0	3	2	1	1
21	0	2	2	0	0
18	0	1	2	-1	1
					2.5

Hypothesis 2

Types of academic social media	Performance	XRa	XRa – Mx	YRa	YRa – My	Sum Diffs
144	819	8	3.5	7.5	3	10.5
140	819	7	2.5	7.5	3	7.5
121	811	6	1.5	6	1.5	2.25
110	806	5	0.5	5	0.5	0.25
66	802	4	-0.5	4	-0.5	0.25
59	0	3	-1.5	2	-2.5	3.75
21	0	2	-2.5	2	-2.5	6.25
18	0	1	-3.5	2	-2.5	8.75

Calculation
R = CoVariance / (XRa St. Dev. * YRa St. Dev.)

Key
XRa = Ranks of X Values; YRa = Ranks of Y Values
XRa - Mx = X rank minus mean of X ranks
YRa - My = Y rank minus mean of Y ranks
Sum Diffs = (XRa - Mx) * (YRa - My)

Result Details
X Ranks
Mean: 4.5
Standard Dev: 2.45
Y Ranks
Mean: 4.5
Standard Dev: 2.38
Combined
Covariance = 39.5 / 7 = 5.64
R = 5.64 / (2.45 * 2.38) = 0.97

rs = 0.96978, p (2-tailed) = 7E-05.

r_s = 0.96978, *p* (2-tailed) = 7E-05.

By normal standards, the association between the two variables would be considered statistically significant.

Research Hypothesis 3: There is no significant correlation between social influence and research collaborative activities

Research Collaborative Activities	**Social Influence**	**Rank (Research Collaborative Activities)**	**Rank (Social Influence)**	**D**	d^2
681	743	11	11	0	0
650	693	9	10	-1	1
620	671	8	9	-1	1
614	633	7	8	-1	1
598	389	6	7	-1	1
503	0	5	3.5	1.5	2.25
476	0	4	3.5	0.5	0.25
330	0	1	3.5	-2.5	6.25
655	0	10	3.5	6.5	42.25
438	0	3	3.5	-0.5	0.25
411	0	2	3.5	-1.5	2.25
					57.5

Hypothesis 3

Research Collaborative Activities	Social Influence	XRa	XRa - Mx	YRa	YRa - My	Sum Diffs
681	743	11	5	11	5	25
650	693	9	3	10	4	12
620	671	8	2	9	3	6
614	633	7	1	8	2	2
598	389	6	0	7	1	0
503	0	5	-1	3.5	-2.5	2.5
476	0	4	-2	3.5	-2.5	5
330	0	1	-5	3.5	-2.5	12.5
655	0	10	4	3.5	-2.5	-10
438	0	3	-3	3.5	-2.5	7.5
411	0	2	-4	3.5	-2.5	10

Calculation

R = CoVariance / (XRa St. Dev. * YRa St. Dev.)

Key

XRa = Ranks of X Values; YRa = Ranks of Y Values
XRa - Mx = X rank minus mean of X ranks
YRa - My = Y rank minus mean of Y ranks
Sum Diffs = (XRa - Mx) * (YRa - My)

Result Details

X Ranks
Mean: 6
Standard Dev: 3.32

Y Ranks
Mean: 6
Standard Dev: 3.04

Combined
Covariance = 72.5 / 10 = 7.25
R = 7.25 / (3.32 * 3.04) = 0.719

rs = 0.71874, p (2-tailed) = 0.0127.

By normal standards, the association between the two variables would be considered statistically significant.

Research Hypothesis 4: There is no significant correlation between facilitating conditions and disseminating of research finding

Disseminating of Research Findings	**Facilitating Conditions**	**Rank (Disseminating of Research Findings)**	**Rank (Facilitating Conditions)**	**D**	d^2
621	794	9	9	0	0
473	760	8	8	0	0
417	663	7	7	0	0
403	590	6	6	0	0
395	539	5	5	0	0
390	506	4	4	0	0
384	396	3	3	0	0
0	379	1.5	2	-0.5	0.25
0	376	1.5	1	0.5	0.25
					0.5

Hypothesis 4

Disseminating of research findings	Facilitating Conditions	XRa	XRa - Mx	YRa	YRa - My	Sum Diffs
621	794	9	4	9	4	16
473	760	8	3	8	3	9
417	663	7	2	7	2	4
403	590	6	1	6	1	1
395	539	5	0	5	0	0
390	506	4	-1	4	-1	1
384	3.96	3	-2	3	-2	4
0	379	1.5	-3.5	2	-3	10.5
0	376	1.5	-3.5	1	-4	14

Calculation

R = CoVariance / (XRa St. Dev. * YRa St. Dev.)

Key

XRa = Ranks of X Values; YRa = Ranks of Y Values
XRa - Mx = X rank minus mean of X ranks
YRa - My = Y rank minus mean of Y ranks
Sum Diffs = (XRa - Mx) * (YRa - My)

Result Details

X Ranks
Mean: 5
Standard Dev: 2.73

Y Ranks
Mean: 5
Standard Dev: 2.74

Combined
Covariance = 59.5 / 8 = 7.44
R = 7.44 / (2.73 * 2.74) = 0.996

rs = 0.99582, p (2-tailed) = 0.

By normal standards, the association between the two variables would be considered statistically significant.

Research Hypothesis 5: Facilitating conditions has no significant influence on the frequency of measuring research impact

Frequency of Measuring Research Impact	**Facilitating Conditions**	**Rank (Frequency of Measuring Research Impact)**	**Rank (Facilitating Conditions)**	**d**	d^2
657	794	9	9	0	0
644	760	8	8	0	0
617	663	7	7	0	0
616	590	6	6	0	0
602	539	5	5	0	0
599	506	4	4	0	0
586	396	3	3	0	0
542	379	2	2	0	0
0	376	1	1	0	0
					0

Hypothesis 5

Frequency of Measuring Research Impact	**Facilitating Conditions**	**XRa**	**XRa – Mx**	**YRa**	**YRa – My**	**Sum Diffs**
657	794	9	4	9	4	16
644	760	8	3	8	3	9
617	663	7	2	7	2	4
616	590	6	1	6	1	1
602	539	5	0	5	0	0
599	506	4	-1	4	-1	1
586	396	3	-2	3	-2	4
542	379	2	-3	2	-3	9
0	376	1	-4	1	-4	16

Calculation

R = CoVariance / (XRa St. Dev. * YRa St. Dev.)

Key

XRa = Ranks of X Values; YRa = Ranks of Y Values
XRa - Mx = X rank minus mean of X ranks
YRa - My = Y rank minus mean of Y ranks
Sum Diffs = (XRa - Mx) * (YRa - My)

Result Details

X Ranks
Mean: 5
Standard Dev: 2.74

Y Ranks
Mean: 5
Standard Dev: 2.74

Combined
Covariance = 60 / 8 = 7.5
R = 7.5 / (2.74 * 2.74) = 1

rs = 1, p (2-tailed) = 0.

By normal standards, the association between the two variables would be considered statistically significant.

Research Hypothesis 6: There is no significant relationship between social influence and research information gathering activities

Social Influence	**Research Information-Gathering**	**Rank (Social Influence)**	**Rank (Research Information-Gathering)**	**D**	d^2
743	776	12	12	0	0
693	736	11	11	0	0
671	712	10	10	0	0
633	701	9	9	0	0
389	686	8	8	0	0
0	677	4	7	-3	9
0	666	4	6	-2	4
0	626	4	5	-1	1
0	596	4	4	0	0
0	587	4	3	1	1
0	524	4	2	2	4
0	518	4	1	3	9
					28

Hypothesis 6

Social Influence	Research Information-Gathering	XRa	XRa – Mx	YRa	YRa – My	Sum Diffs
743	776	12	5.5	12	5.5	30.25
693	736	11	4.5	11	4.5	20.25
671	712	10	3.5	10	3.5	12.25
633	701	9	2.5	9	2.5	6.25
389	686	8	1.5	8	1.5	2.25
0	677	4	-2.5	7	0.5	-1.25
0	666	4	-2.5	6	-0.5	1.25
0	626	4	-2.5	5	-1.5	3.75
0	596	4	-2.5	4	-2.5	6.25
0	587	4	-2.5	3	-3.5	8.75
0	524	4	-2.5	2	-4.5	11.25
0	518	4	-2.5	1	-5.5	13.75

Calculation

R = CoVariance / (XRa St. Dev. * YRa St. Dev.)

Key

XRa = Ranks of X Values; YRa = Ranks of Y Values
XRa - Mx = X rank minus mean of X ranks
YRa - My = Y rank minus mean of Y ranks
Sum Diffs = (XRa - Mx) * (YRa - My)

Result Details

X Ranks
Mean: 6.5
Standard Dev: 3.23

Y Ranks
Mean: 6.5
Standard Dev: 3.61

Combined
Covariance = 115 / 11 = 10.45
R = 10.45 / (3.23 * 3.61) = 0.897

rs = 0.89677, p (2-tailed) = 8E-05.

By normal standards, the association between the two variables would be considered statistically significant.

APPENDIX D

Department of Library and Information Technology,
School of Information and Communication Technology,
Federal University of Technology, Minna.
2nd November, 2020.

Dear Respondent,

I am a PhD student of the above named University currently conducting a research on the topic: " Influence of the use of Academic Social Media on Research Activities of Library and Information Science Educators in Universities in Nigeria" I humbly solicit your candid responses to the content of the questionnaire. Your responses will be treated with utmost confidentiality and used only for this research purpose.

Thank you for your cooperation.

Yours sincerely,

SALAMI, Rita Otibhor
Phone: 07033395975
E-mail: r.otibhor@futminna.edu.ng

PART ONE

INFLUENCE OF THE USE OF ACADEMIC SOCIAL MEDIA ON RESEARCH ACTIVITIES OF LIBRARY AND INFORMATION SCIENCE EDUCATORS IN UNIVERSITIES IN NIGERIA

Please, answer the questions below by filling or ticking ( ) the space that applies to you.

RESPONDENTS DEMOGRAPHIC INFORMATION

Name of Institution …….

Gender: Male ( )

Female ( )

Age (Years) : 20- 30

31- 40

41- 50

51- 60

61 & above

Qualification : PhD Degree ( )

Master Degree ( )

Bachelor Degree ( )

Present Rank: Professor ( )

Associate Professor ( )

Senior Lecturer ( )

Lecturer 1 ( )

Lecturer 11 ( )

Assistant Lecturer ( )

Graduate Assistant ( )

Work Experience (Years) 1- 5

6-10

11-15

16-20

21-25

26-30

31 & above

PART TWO

SECTION ONE: TYPES OF ACADEMIC SOCIAL MEDIA PLATFORMS USED IN ENHANCING RESEARCH ACTIVITIES

Please which of the following academic social media platforms do you use in enhancing your research activities?

1. Academia.edu
2. Researchgate
3. Mendeley
4. Methodspace
5. Impactstory
6. Linkedin
7. Google Scholar
8. Open Researcher and Contributor Identifier (ORCID)

SECTION TWO: FREQUENCY OF USE OF ACADEMIC SOCIAL MEDIA

Please indicate how frequently you utilize the academic social media platforms indicated in section one above.

S/N	Academic Social Media Platforms	Daily	Weekly	BI-Weekly	Monthly	Once in a While
1	Academia.edu					
2	Research gate					
3	Mendeley					
4	Methodspace					
5	Impact Story					
6	Linkedin					
7	Google Scholar					
8	Open Researcher and Contributor Identifier (ORCID)					

SECTION THREE: EXTENT OF USE OF ACADEMIC SOCIAL MEDIA IN ENHANCING RESEARCH INFORMATION GATHERING ACTIVITIES

Based on the following scales please indicate the extent of use of academic social media in enhancing your research information gathering activities

S/N	Information Gathering Activities	Very High	High	MODERATE	Low	Very Low
1	Reviewing research literature					
2	Find collaborators for research projects and groups					
3	Identifying research opportunities					
4	Identifying grant opportunities					
5	Identifying upcoming seminars, conferences, workshops, and webinars					
6	Keeping up to date on new research trends					
7	Keeping up with fellow users' research interest					
8	Following topics, the community is paying attention to					
9	Collecting primary data such as administration of the questionnaire, interview schedule, and observation					
10	Identifying experts in my field					
11	Identifying potential publication outlets					
12	Identifying yet unpublished works					

SECTION FOUR: LEVEL OF USE OF ACADEMIC SOCIAL MEDIA IN RESEARCH COLLABORATIVE ACTIVITIES

Based on the following scales, please indicate your level of research collaborative activities in academic social media platforms

S/N	Collaborative Research Activities	Very High	High	Moderate	Low	Very Low
1	Seek advice from colleagues					
2	Belonging to a research group					
3	Sharing data					
4	Sharing my research findings					
5	Participate in group discussions					
6	Sharing information on new research trends.					
7	Uploading my manuscript for other colleagues to assess					
8	Connecting with people who have a similar research interest					
9	Co-authoring with colleagues within Nigeria					
10	Co-authoring with colleagues outside Nigeria					
11	Co-authoring with colleagues in other disciplines					

SECTION FIVE: EXTENT OF DISSEMINATION OF RESEARCH FINDINGS

Based on the following scales, please indicate the extent you disseminate your research findings through academic social media platforms

S/N	EXTENT OF DISSEMINATION OF RESEARCH FINDINGS	Very High	High	Moderate	Low	Very Low
1	Uploading of abstracts of articles (journal articles, conference proceedings, and books)					
2	Uploading of full-text articles (journal articles, conference proceedings, and books).					
3	Sharing links of published articles					
4	Sharing data underlining my research					
4	Sharing software codes and technology applications utilised during the research process					
5	Sharing scholarly presentations such as posters and slides					
6	Uploading working papers					
7	Sharing soft ware codes and technology applications utilised during the research process					

SECTION SIX: MEASUREMENT OF IMPACT

Please indicate the frequency to which you measure your research impact in academic social media platforms

S/N	RESEARCH ACTIVITIES IN MEASURING RESEARCH IMPACT	Always	Often	Sometimes	Rarely	Never
1	I search for information on the frequency of my articles views					
2	I search for information on how often my articles are cited					
3	I search for information on researchers who are attracted to my work and the countries they reside					
4	I search for feedbacks related to my work					
5	I search for information on the number of bookmarks my articles have received					
6	I monitor the number of full test reads of my articles					
7	I search for information on researchers who are attracted to my work and the countries they reside					
8	I monitor the number of recommendations my articles receive					

SECTION SEVEN: FACTORS THAT INFLUENCES THE USE OF ACADEMIC SOCIAL MEDIA IN ENHANCING RESEARCH ACTIVITIES

Based on the following scales please indicate the extent you agree that the following factors influence the use of academic social media in enhancing research activities

S/N	FACTORS INFLUENCING THE USE OF ACADEMIC SOCIAL MEDIA PLATFORMS	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
	Performance Expectancy					
1	Academic social media will be useful in gathering information for my research					
2	Academic social media will enhance my collaborative research activities					
3	Academic social media will be useful in sharing and promoting my research findings					
4	Academic social media will be useful in tracking my scholarly impact					
5	Utilisation of academic social media will improve my research productivity					
	Social Influence					
6	I became aware of academic social media through a conference/seminar/workshop/webinar I attended					
7	I received a promotional email from an academic social media platform					
8	I am obliged by my institution to utilise academic social media platforms					

9	My colleagues recommended academic social media utlilisation					
10	I utilise academic social media because most of my colleagues also use it					
	FACILITATING CONDITIONS					
11	I have institutional support to utilise academic social media					
12	I have the necessary knowledge to use academic social media tools					
13	I have received adequate training on how to use academic social media					
14	I have the time to constantly utilise academic social media					
15	I have an electronic device(Android phone, tablet, and computer)					
16	I have access to a fast internet network					
17	The privacy and security of one's work is/are protected in academic social media platforms					
18	I have regular access to internet data					
19	I have no health issues such as poor sight and backache					