CHAPTER ONE

INTRODUCTION

1.1   Background to the study

In Nigeria and many countries, the improvement and invention of new agricultural technologies are hinged on research work by scholars in different establishments where agricultural research takes place. In Nigeria, fifteen agricultural research institutes exist and they are called National agricultural research institutes (NARIs) and each of them has a different national mandate. These fifteen agricultural institutes are under the direct supervision of Agricultural Research Council of Nigeria (ARCN); an agency of the Federal Ministry of Agriculture and Rural Development of Nigeria. The National agricultural research institutes are spread across all the geo-political zones in Nigeria. From the South - west Nigeria are: Cocoa Research Institute of Nigeria (CRIN) Ibadan; Institute of Agricultural Research and Training (IAR&T), Ibadan; National Institute for Horticultural Research (NIHORT), Ibadan; and National Institute for Oceanography and Marine Research (NIOMR), Lagos.

Located in the North-central of Nigeria are: Nigerian Stored Products Research Institute, (NSPRI), Ilorin; National Institute for Freshwater Fisheries Research (NIFFR), New-Bussa; National Cereal Research Institute (NCRI) Badegi; and National Veterinary Research Institute of Nigeria, Vom. Those located in the North-western Nigeria are; National Animal Production Research Institute (NAPRI), Zaria; National Extension and Research Liaison Services (NEARLS), Zaria; and Institute for Agricultural Research (IAR), Zaria. In the South- south region of Nigeria, there are: Rubber Research Institute of Nigeria (RRIN), Benin; and National Institute for Oil-palm Research (NIFOR), Benin. In the North-east and South-east, Nigeria, there are: Lake Chad Research Institute (LCRI), Maiduguri; and National Root Crops Research Institute (NRCRI), Umudike respectively. Four of the institutes are owned by Nigerian universities and are governed by the same condition of service used for Nigerian Universities, while the remaining eleven institutes owned by the Federal Ministry of Agriculture and Rural Development are being administered with condition of service approved by The Head of Civil Service of Nigeria. All the fifteen institutes are supervised by ARCN.

However, apart from the fifteen National agricultural research institutes supervised by ARCN, there are other research institutes that have national mandate to conduct research into an aspect of agriculture or related discipline but are not supervised by ARCN. Some of

the institutes in this category include National Centre for Agricultural Mechanisation (NCAM), Ilorin. The Institute has the mandate to enhance agriculture mechanisation in Nigeria: Agricultural and Rural Management Training Institute (ARMTI), Ilorin. This institute's mandate is to train manpower for improvement of agriculture and rural management; Federal Institute of Industrial Research (FIIRO), Oshodi. The national mandate of this institute is to develop products from agricultural crops for industrial production; Forestry Research Institute of Nigeria (FRIN), Ibadan. The mandate of the institute is to conduct research into the effective management of Nigerian forest; and Nigerian Institute for Trypanosomiasis Research (NITR), Kaduna. The institute's mandate is to develop control for the disease called trypanosomiasis. Despite the differences in the mandate of the institutes, their researchers collaborate to conduct research to improve agricultural productivity by developing technologies to solve agricultural problems. The researchers in the institutes also jointly produce scholarly publications from their research findings.

According to ARCN (2013), the NARIs research mandates include engaging in scientific research to improve the yield of cultivated agricultural crops, food storage, processing and packaging for domestic and international markets. Others are genetic improvement of different livestock to meet the protein need of the nation and for export. It also includes protection of livestock from diseases through production of vaccines and other recognised scientific care.

Based on the national mandate shared among NARIs, the ARCN publication on the structure and achievements of NARIs also indicates that the research institutes under her supervision have made some landmark achievements, despite the challenges facing them. Some of the achievements reported are development of scientific methods that produce high yielding pest and disease resistant cassava and other tuber crop varieties that are suitable for food and industrial needs of Nigeria. Others are genetic improvement and increased production of fruits, vegetables, grains and livestock.

The achievements of the various research institutes could be attributed to many factors. Prominent among them is the human resources of the institutes. The conditions of service that govern the NARIs allow the institutes to have different categories of staff with different responsibilities. The most highly rated among the group of staff in the institutes is the researchers' cadre. The staff in this cadre is officially assigned the duty of conducting research in line with the national mandate of each institute and also to publish the findings of

their research in a scholarly publication output. This is often used to determine their level of productivity.

To meet the demands of conducting research and production of good scholarly publication output on the national mandate of each institute by the researchers, it is expected that a researcher, apart from having a conducive environment and well equipped laboratories to conduct his research, also needs to have some in-built positive attitude like self-management practices. Doug (2010) explained that self-management practices are essential for an individual to achieve greatness in his chosen career. Other key factors to researchers' success include adequate resource management, effective communication, and access to and use of information to achieve many change initiatives.

Self-management, according to Scott and Reece (2013) is attitudes that is introduced to learners /employees so that such persons can on their own do their work and convince themselves of the need to do the work properly through self- motivation. Self-management is also described by Daniel (2011) as an important educational attitude to foster self-reliance and independence. He explained further that the variable if well managed can enhance learners' academic performance and the productivity of an employee through proper time management of the employee on tasks and approach to how problems are solved in the organisation.

Ifeanyi (2015) noted that every intelligent individual does not always perform excellently in personal lives, organisations and many other areas of endeavours in life. He noted further that many successful business men did not go to school to learn business methods. According to Ifeanyi (2015), many who performed poorly while in school, are among those who excel in wealth creation. He then concluded that there is a factor that contributes to success other than intelligence. The factor the author revealed was responsible for success apart from intelligence was self-management of happiness, anger, fear and sadness.

The critical point in self-management was explained to include setting goals, monitoring behaviour and evaluating progress. According to Tracy (2015), examples of self-management features were self–programming, self-assessment and self-encouragement. Tracy (2015) added that features of self-management are inheritable by the selected few, but most people are acquainted through parents, teachers or employers. The self-management skills according to Tracy are important to achieving set goals, but the skills cannot be created instantly, rather it entails some period of learning and work on the part of an individual who

desires it to be able to possess it. However, Tracy (2015) further explained that possession of self-management features by an individual does not necessarily mean that people who acquires the skill reached the zenith of perfection, but it implies that the individual brings some amount of discipline to his life.

For efficiency in research work, increased scholarly publication output and steady career progression, a researcher needs to have self-management features. The self-management features that are expected to manifest in research personnel include the development of professional working relationship with superior research officers and colleagues. The researcher is expected to set and meet deadlines, communicate results using a variety of acceptable methods. Such an individual should be able to manage research project and also motivate himself. He must have strong work ethics and display visible products of his efficiency. It is also expected that the researcher should do his work without envisaging any close supervision. He must be able to think critically and evaluate his own work and those of others, making judgments about the value of information and drawing conclusion from data (Heskett, 2015).

The possession of self-management features according to Cavendish (2010) stimulates happiness and strength that will further encourage a researcher to concentrate on his work to achieve set goals. Okonedo (2015) revealed that despite the importance of scholarly publication output to the smooth career progression of researchers in NARIs in Nigeria, researchers do not often publish enough scholarly articles that would support their career. The study carried out by Ogbomo (2010) discovered some reasons why researchers in research organisations and universities do not meet the required scholarly publication output. Some of the limiting factors identified are high demands of effort to accomplish daily work routine, weak research orientation and lack of academic freedom.

To reduce the effect of the aforementioned limitations, according to Hunter and Scherer (2009), a researcher must acquire self-management skills. These authors emphasised that the success of researchers or knowledge workers is linked to self-management practices because, as explained by Hunter and Scherer (2009), self-management is built directly on processes of providing a systematic framework that will make researchers manage themselves, their resources, work and their relationship better. In the process, Hunter and Scherer (2009) explained further that it is expected that possession of self-management features by researchers will help to transform their individual and collective ability to improve their scholarly publication output.

The importance of self-management as a contributory factor to improvement of the scholarly publication output of researchers can be appreciated further by the illustration given by Drunker (1999), who stated that self- management begins with the human nervous system, especially from the brain .The author explained further that the brain lies at the center of knowledge of the researcher's work, because the researchers use the brain to focus, decide and act. Drunker (1999), therefore, concluded that self-management examines how the brain and nervous system function and that the level of self-management features that manifested in researchers will determine how they will task their brain to achieve higher efficiency in the conduct of research and production of good scholarly publication output.

Adequate information is important for the enhancement of researchers' scholarly publication output, because it will help them to have knowledge of research works already done in their area of research interest and it is expected that it will stimulate them to work diligently on their research interest. Hence, electronic information resources are dependable information source that researchers in NARIs should be aware of and use maximally at every stage of their research work.. .Electronic information resources are information materials produced to provide researchers with prompt and relevant scholarly information at any point convenient for the researcher. As explained by Okon, Patrick and Bosire (2014), electronic databases are knowledge packaged through devices that are driven by electronic equipment. They include the Internet, electronic journals, electronic databases, online catalogue, electronic newspaper/magazines etc. The importance of electronic information resources is confirmed by Egunjobi and Awoyemi (2013), who explained that online information are materials that support researchers in their investigation and a means for researchers to scan much information quickly.

Based on derivable values associated with electronic resources, researchers who are desirous of quality research and good scholarly publication output need to be aware of them, and have desire to consult them to facilitate their investigations. Hence, awareness of relevant kind of electronic databases is important so that researchers can be familiar with the databases that were subscribed in their institutes' libraries. The awareness programme will also guide them on the laws guiding the use, the equipment and skills they need to efficiently acquire and consult the databases in their environment so as to enhance their effort.

Awareness, as described in *Chamber's Dictionary (2016)*, means knowing about the existence of an item or issue which is likely to be important to such an individual. Awareness has been recognised as one of the factors that stimulate one's desire to access the item

required. According to Ani and Ahiauzu (2008), awareness can be described as a process by which somebody gets familiar with how something is situated or having facts about it, or can recognise it, describe it in a way other people can have some idea about it. In the opinion of Akpojotor (2016), awareness can also be seen as having learnt something about an item. Akpojotor (2016) added that persistent awareness creation of a new technology is very important to stimulate the targeted users to appreciate the product and create interest to use it. If the awareness created for a product is low, it may slow down its appreciation and the interest of the targeted users and consequently, the rate of the use of the product may be low too. This view was buttressed by Babalhaveji (2013), who observed that low knowledge of the acquired electronic database in the libraries of three Iranian Universities, contributed to none usage of the databases.

In their explanation of the effect of Information Communication Technology (ICT), on scholarly publication among lecturers in Nigerian universities, Obuh and Bozimo (2012) also confirmed that awareness of ICT has improved steps followed in conducting investigation, accessing information and publishing in scholarly publication. Also, awareness of electronic databases through ICT was reported by these authors to have improved access to all kinds of scholarly information and also enhanced scholarly publications, because according to them, more outlets to publish were created, just as more information are available to researchers. Similarly, through awareness of electronic resources, libraries across nations were able to solve the problem of scarcity of information needed by researchers to stimulate scientific research.

While effort to arouse the interest of researchers to learn about electronic resources is being intensified by libraries that have subscribed to some relevant databases for their users, it can be observed that library management in various libraries where e-resources are available have not limited themselves to creating awareness only, they have also intensified effort in making their library users to create interest in the library electronic collections so that they can consult the electronic databases the libraries have subscribed to and make them impact favourably on knowledge sharing, where it is required and scholarly publication output of the researchers. The level of impact achieved as a result of the consultation of the databases by researchers will justify the huge investment made on electronic resources by the library management.

Observations from the findings from investigations done by researchers on level of consultations and gains derived by researchers as a result of usage of electronic databases

showed that the level of consultation is noticeably increasing. For example, Baffour and Ossom (2015) confirmed from their investigation which centered on the use and impact of the Internet driven journals on members of staff in a tertiary institution in Kumasi Polytechnic, Ghana that most researchers and lecturers are users of e-journals in the library and they access the e-journals at different locations within the institution. Many among the staff who indicated that they used e-resources frequently confirmed that it impacted positively on their preparation of lecture notes, conduct of research and production of different scholarly publication output. The majority of the respondents were reported to have expressed that they were happy with the consultation of the online scholarly periodicals. Some restricting situations to maximising the consultation of electronic resources were reported to include low speed Internet connectivity, poor electricity supply and inadequate skill for search strategies.

However, among different electronic resources that are available for the use of researchers, the electronic journal has been singled out by Bakar and Ariffin (2013) as being of great significant impact on researchers' scholarly publication output. The report from Bakar and Ariffin (2013) particularly showed that electronic journals were widely consulted by researchers in Malaysia and it significantly improves the lecturers' lecture notes and their scholarly publication output.Baffour and Osssom. (2015) however remarked that in the process of the consultation of electronic databases among scholars, two main challenges could be identified that are limiting the increased use of the technology. The problems highlighted were skill deficiency among many of the targeted users and workload of many of the researchers. These reasons were explained as factors that can reduce time to search for information from the databases.

However, it is important that head of libraries in NARIs in Nigeria must strive to identify factors that support the knowledge and consultation of electronic databases among their researchers and promote the factors in their libraries so that the frequency of the level of consultation of electronic databases among their researchers can continue unhindered. This is important because of the positive impact the consultation of electronic databases is expected to bring to the enhancement of research and scholarly publication output of the researchers in NARIs. The quality of teaching, learning, research and scholarly publication output that is achieved in any research inclined organisation according to Olasore and Adekunmisi (2015) can be influenced highly by the quality of information and services the researchers get from their libraries.

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The ARCN approved condition of service which guides the management of each agricultural research institute in the appointment and promotion of staff emphasised specific numbers of scholarly publication output researchers must have to their credit based on the outcome of their research findings on the national mandate of their institutes. This indicates that scholarly publication outputs are very important for a researcher in NARIs to excel in his career and to sustain his academic relevance among his professional colleagues within and outside Nigeria. Scholarly publication outputs are in form of scholarly journals, conference proceedings, books and grey materials. He further stated that popular magazines are not popular medium of disseminating scholarly publication emanating from scientific research because they are in most cases used by journalists or freelance writers.

Solomon (2007) also explained that scholarly journals are the most prominent among the group of publications through which scholarly publications are disseminated and they can be in print or electronic forms. Majority of electronic scholarly publications are versions of the print titles. Electronic scholarly publications are available online via the Internet and commercial services like Elton.B. Stevens &Co (EBSCO), Academic Search Complete, Access to Online Research in Agriculture (AGORA), The Essential Electronic Agricultural Library (TEEAL) and many others .Scholarly journals are vital to researchers and they are rated differently. The importance attached to them is usually based on the level of citations. Most often, researchers do have a feeling of satisfaction when their articles are published in a journal and more importantly in highly rated journals in their disciplines and when they publish books that are highly accepted and referred   by professional colleagues and students.

Apart from the fact that published quality articles and books are signs of hardwork among researches, they are used in the promotion of researchers in their career progression. Carl (2007) in a study that focused on measuring the value and prestige of scholarly publications explained that scholarly publications do add value to researchers and raise their self-esteem in their places of work and among their professional colleagues worldwide. In the view of Wadesango (2014), research productivity evaluation which is done based on scholarly publication output of the researcher has significant input on tenure, it raises and mobilises, especially in research-oriented system.

In their study, Sulo, Kendagor, Kosgei, Tuitoek and Chelangar (2012) concluded that research and scholarly publication output of a researcher contribute very well to the expansion and dissemination of new discoveries which can graduate to the development of fresh information and can contribute to existing knowledge. These authors equally added that

scholarly publication output provides good opportunity for researchers to become accomplished scholars.

In view of the important roles scholarly publication play in the career of lecturers in the universities and among researchers in NARIs, it is mandatory for the researchers to always increase their scholarly publication. Lee and Boud (2003) explained that important issues like employment, responsibilities and attainment of higher positions are essentially judged by the number and quality of scholarly publications which are accessed by straight counts of articles. The scholarly publication output of researchers in an academic system is used as an index of the institution's achievement and it serves as an important instrument to measure the university or research institution's academic efforts and this is an essential criterion which helps to secure fund for research. (Kyvik, 2003).

The importance of scholarly publication output of researchers is further emphasised by Sedikadiwa (2005) who postulated that scholarly publications are the image of a scholar, and the scholar particularly those who work in research institutes must write with due consideration to their discipline and the national mandate of their institutes otherwise they could have a retrogressive career or get their appointment terminated. Sedikadiwa (2005) also expressed that scholarly publication output is important because of some other important issues apart from promotions, giving of responsibilities and advancement in salary, but the author explained that scholarly publication is also unique because it leads to self-education.

Despite the importance of scholarly publication output in academic institutions, some factors that serve as impediments to attaining quality scholarly publication output by researchers have been identified. One of the factors, according to Hadjincola and Soterion (2005)is having very long hours of administrative work which make the researcher to engage in consultations with administrative documents and personnel. The authors advised that the researchers should have moderate hours of teaching and consultation. Hence, they suggested a period that is not less than four hours per week for the consultation of administrative documents and about eight hours per week for lecturing as being moderate to facilitate publishing by researchers.

Another study on research organisations and their performance was reported by Auranen (2007). The report highlighted some factors as being important to enhancement of scholarly publishing among scholars. The factors include status of the scholar, level of good leadership displayed, magnitude of work, level of information exchange, and quality of information available to a researcher, morale and motivation. Possibility of collaboration in

research was also seen as a factor that enhances the performance of researchers to improve their scholarly publication output; hence an organisation with good collaborations is seen as an asset to researchers' publication output enhancement.

Generally, the quality of scholarly publication output of a researcher is assumed to be the extent to which the researcher is committed to work. It is equally perceived as a measure of his efficiency, knowledge and potentials. The ability to have quality scholarly publications does not only help the researcher in his career progression, it also brings him to limelight among his colleagues and also in the institution where he works.

However, the quality of scholarly publication output from researchers in Nigerian agricultural research system according to FAO (2009) is not impressive enough compared to what is obtainable in other parts of the world. Also, United Nations Educational, Scientific and Cultural Organisation UNESCO, (2017) expressed in her year 2017 report on Registry of Open Access Repository that "Nigeria has a very low percentage of its publication available on-line and in Open Access". According to UNESCO, the low level of Nigeria publications on-line is not too good based on the fact that Nigeria with a population of about 173 million is one of the most populous countries in Africa, with over 170 National University Commission NUC licensed universities (Federal, State and Private) (Umeh 2019). Apart from the universities, Nigeria also has many agriculturally based research institutions that are involved in various research works and scholarly publishing. The United Nations organisation concluded that a much better performance was expected from Nigeria in the area of her publication output online.

The findings from the study conducted by Ifeanyi (2010) on trends in electronic journal publishing in Africa further confirmed the low level of Nigerian publication on-line. The author showed the distribution of journals in Africa Journal Online (AJOL) by discipline. Nigeria has 351 Nigerian journals listed in AJOL cutting across 19 disciplines. The discipline that has the highest number of journals was medicine with 107 which is 30.5% of the total Nigerian journal listed in AJOL. This scenario might have contributed to the view expressed by Baty (2011) in his report on African University ranking "the volume of research activities is comparatively low in Africa".

From the scenario given by Ifeanyi (2010) the discipline that was next to medicine was agriculture with 48 journals which is 13.6%. The difference in the number of journals between medicine and agriculture further buttressed the view of FAO in her technical bulletin, where the UN agency noted that research activities of Nigerian researchers in

agriculture is low and that their scholarly articles are often rejected for publishing in AJOL and many other reputable journals in the discipline. If Nigerian researchers in agriculture are not performing at low ebb as observed by FAO, it is expected that agriculture as a discipline should have higher number of journals listed in AJOL than all other disciplines. This is because in Nigeria, there are more tertiary institutions where agricultural related courses are offered at different levels than medicine. In each of the tertiary institutions in Nigeria where agriculture and related courses are being taught, it is expected that there will be lecturers, who are expected to conduct research and generate scholarly publication from their researches.

Apart from researchers in agriculture in Nigerian tertiary institutions, like universities polytechnics, colleges of education and many colleges of agriculture owned by both states and federal government, Nigeria also has abundant human resources in agricultural research institutes conducting research in different areas of agriculture and expected to publish their research findings. With all the highlighted institutions and their human resources in agriculture, it is expected that the discipline will perform better in scholarly publication output because of the envisaged volume of research that is expected to emanate from the sector

Based on low research performance reported by FAO and the low number of journals agriculture as a discipline was indicated to have in AJOL, there is a need to investigate some of the perceived variables that can improve the present low performance in research and scholarly publication output in agricultural research in future. This is very important because, according to Okunadeand Williams (2014):

> Agriculture, the science of cultivation of crops and livestock for the production of food and for production of items for food-based companies' is of paramount importance to life. It is not out of place to say that no agriculture, no life. (p.12)

Hence, it is important that Nigeria as a country should promote quality research because the quality of research and scholarly publication output from researchers in agricultural research institutes in Nigeria according to Okunade and Williams (2014) may contribute to improved food production and excellent nutrition that will be available for Nigerians; this is paramount to the sustenance of the country's population and her economy. Therefore, this study was designed to explore the relationship among self-management, awareness and the use of e-resources and also determined if the three variables will serve as a predictor for enhancement of the scholarly publication output of researchers in NARIs.

1.2 Statement of the problem

In view of numerical strength of researchers in agriculture and its related disciplines in different tertiary institutions in Nigeria like colleges of agriculture, polytechnics and universities and research institutes, it is expected that a large number of scholarly publication output by Nigerian researchers in agriculture should be available in reputable journals in the discipline. However, the report from FAO, UNESCO and findings on the status of the scholarly publication output of researchers in agriculture in Africa indicate that developing countries including Nigeria have low scientific publications and high rejection rates by journals. FAO also revealed further that 70% of agricultural findings by researchers in developing countries are published as tertiary grey literature, conference proceedings and only a very small percentage of research in Africa find its way into scholarly journals like African Journal Online (AJOL) and Scientific Electronic Online (SCIELO), web of science and Scgma.

Low scientific publications and high rejection rates of Nigerian agricultural researchers' scholarly publication output may be due to poor research processes or bad writing style of scholarly publications due to lack of self-management practices by the researchers which are necessary to enhance the conduct of research and production of good scholarly publications. The situation may also be due low awareness and non use of adequate information materials like information in digital formats by knowledge investigators as support in the process of conducting research or developing their research into scholarly publications. It is on the basis of the assumed deficiencies therefore that this study examined the self-management of researchers in NARIs, their level of awareness and the frequency of the use of electronic information resources as predictors of their scholarly publication output.

1.3 Objectives of the study

The general objective of the study was to determine the relationship among self-management, awareness and use of e-resources and scholarly publication output of researchers in agricultural research institutes in Nigeria. The specific objectives of the study are to:

i.   ascertain the level of scholarly publication output among the researchers in NARIs.;

ii.   determine the level of self-management of the researchers in NARIs;

iii   determine the level of awareness of e-resources among researchers in NARIs.;

v.   find out the frequency of the use of e-resources among researchers in NARIs;

vi   find out the relationship of self-management, awareness and the use of e-resources among researchers in NARIs;

vii.   ascertain if self-management, awareness and the use of e-resources predict scholarly publication output among researchers in NARIs; and

viii.   identify the relative contribution of self-management, awareness and the use of electronic resources to the scholarly publication output of the researchers in NARIs.

1.4   Research questions

The study has provided answers to the following research questions:

1. What is the level of scholarly publication output of researchers in NARIs?
2. What is the level of self-management among researchers in NARIs?
3. What is the level of awareness of e-resources among researchers in NARIs?
4. What is the frequency of use of e-resources among researchers in NARIs?
5. What is the relative contribution of self-management, awareness and the use of e-resources to the scholarly publication output of researchers in NARIs?

1.5   Hypotheses

The following null hypotheses were tested in the study at $\alpha = 0.05$ level of significance:

1. There is no significant relationship between self-management and scholarly publication output among researchers' in NARIs.
2. There is no significant relationship between awareness of e-resources and scholarly publication output among researchers' in NARIs.
3. There is no significant relationship between the use of e-resources and scholarly publication output among researchers' in NARIs.
4. There is no significant relationship between self-management and awareness of e-resources among researchers' in NARIs.
5. There is no significant relationship between awareness of e-resources and the use of e-resources among researchers' in NARIs.
6. There is no significant relationship between self-management and use of e-resources among researchers' in NARIs.
7. Self- management, awareness of e-resources and the use of e-resources combined will not significantly predict scholarly publication output among researchers in NARIs.

8. There is no significant difference in scholarly publication output, self-management, awareness and use of electronic resources according to the researchers' workplace in NARIs.

1.6   Scope of the study

This investigation involved the researchers in the fifteen National agricultural research institutes under the supervision of Agricultural Research Council of Nigeria (ARCN). The study also focused on determining if self-management, awareness and use of electronic resources could serve as predictors of scholarly publication output among researchers in NARIs in Nigeria.

The focus of the period the investigation covered particularly in relation to the scholarly publication output of the researchers was 2009-2016. This period was chosen based on the perception that availability and wide acceptance of electronic resources in Nigerian libraries started around 2009. Hence, as part of its scope, the study solicit to find out the number of scholarly publication output of the researchers particularly before 2009 and from 2009 to 2016. The scope of the study also involved finding out the level of awareness and the use of electronic information resources like the Internet, e-journals, e-books, online databases, online catalogue, electronic mail e-encyclopedia, e-dictionary etc. among researchers in NARIs in Nigeria and how the variables, self-management, awareness and use of e-resources serve as a predictor to enhancement of scholarly publication output of researchers in NARIs.

The scope of the investigation also includes the 15 NARIs in Nigeria supervised by ARCN. The institutes are CRIN, IART, NIHORT, NIOMR, NSPRI, NIFFRI, NCRI, NVRI, NAPRI, NEARLS, IAR, RRIN, NIFOR, LCRI, and NRCRI.

1.7   Significance of the study

The investigation conducted is important because it supports the attainment of the objectives set by ARCN for NARIs. The ARCN document on refocusing of agricultural research for food security and economic growth in Nigeria, revealed that the intention of establishment of NARIs in Nigeria was to improve the capacity of existing agricultural resources by developing better ways of production practices and management through modification of the existing methods by introducing new inputs, and improvement in technology which will be driven by the application of scientific research to solve problems.

Scientific research demands that researchers should be aware and also use current resources on knowledge; hence the outcome of this investigation will show the quality of

consciousness and consultation of electronic databases among researchers in NARIs. Based on this, the management of ARCN will be rightly guided on scholarly information resources and interventions necessary to be promoted among researchers in NARIs to further enhance their research work and scholarly publication output. The level of awareness and consultation of databases by researchers in NARIs by the library management of each institute will also guide them to determine the online resources that are required in   the information resources centers.

The enhancement of researchers' effort in NARIs to improve their scholarly publication output will consequently improve food production and ascertain food security for the nation. The improvement in scholarly publication output of researchers in NARIs will also enhance the way Nigeria as a country will be rated among community of nations. The improvement may also attract more research grants from international donor agencies for the researchers to use for research. Also, more collaborations and increased exposure for NARIs researchers through visitations and sponsored external trainings may occur.

Self-management is a factor that is needed among employees to promote productivity in an organisation. Since it is the desire of the ARCN and authority of NARIs in Nigeria to use scientific research to solve agricultural problems, the findings from this investigation on the position of self-management of researchers in NARIs will guide the management of the Institutes to plan for training programmes that will sustain or improve self-management features among researchers in NARIs. The effort made to improve self-management features among NARIs researchers may contribute to improved research work from the researchers. It may lead to invention of new agricultural technologies which will in turn increase food production in the country and also lead to increase in quality of scholarly output of researchers in NARIs. The expected increase in agricultural technology inventions and increase in quantity of scholarly publication output by researchers in NARIs may reduce the poverty level of farmers and agro-processors that will be using the technologies emanating from research effort of the researchers. It may also improve the Gross Domestic Products GDP of the nation through farmers' increased output which is expected to be stimulated by technologies invented by researchers in NARIs.

Based on expected improvement in quality of scholarly publication output from scientific research of researchers, the rejection rate of their scholarly publication may reduce, status of many researchers will be uplifted among their colleagues in and outside Nigeria, more research grant may be available for researchers to work with, increased research

collaboration may occur, researchers may have higher exposure through sponsored training within and outside Nigeria and the rating of Nigeria among the comity of nations may also improve.

1.8   Operational definition of terms

Awareness of electronic resources: This refers to the familiarity of a researcher in NARIs with electronic resources like online databases, electronic journal, online books, online catalogue, online reference books, the Internet, electronic mail, World Wide Web, electronic newspaper/ magazines, CD-Rom database, data archive, theses/dissertations, tutorials, maps, conference   papers and magazines.

Electronic resources: It refers to scholarly information packaged electronically and the scholarly information are agriculturally based and useful for enhancement of research and scholarly publication output of researchers in NARIs.

National agricultural research institutes: These are research institutes that are supervised by Agricultural Research Council of Nigeria (ARCN). They employ researchers and they are expected to create conducive environment for researchers to conduct scientific research to solve agricultural problems. The institute also determine the career progression of researchers based on provisions of the conditions of service approved for use of the management of the institutes by ARCN for the institutes not owned by a university, while institutes owned by a university are governed by the condition of service that prevailed in the university that owned them.

Predictors: It is an assumption held by the researcher that the independent variables in the study namely: self–management, awareness and use of e-resources will influence the dependent variables (scholarly publication output) among the researchers in NARIs.

Researchers: These are the staff of National agricultural research institutes employed as researchers or lecturers as it applies to NARIs owned by universities. The researcher's minimum educational qualification is the bachelor's degree in sciences or engineering.

Scholarly Publication output: This is the medium used for the dissemination of the procedures and findings of researches conducted by NARIs researchers along the mandate of their institutes. Examples of the scholarly publication output include journals, books, and chapters in books, technical reports, conference proceedings and patenting.

Self-management: This is the ability of researchers in NARIs to control their emotion, temper, and whims in the work place and motivate themselves, use their skills, knowledge,

experience, time and values, sincerely to contribute meaningfully to the attainment of the mandate of the institute.

Use of e-resources: This refers to the application of information obtained from various electronic information resources to scientific research on the National agricultural mandate by a researcher in NARIs.

CHAPTER TWO

LITERATURE REVIEW

2.1   Introduction

This chapter reviewed the related literature to the study. The review of the related literature for this study was examined under the following sub-headings:

2.2   Self-management of workers in an organisation

2.3   Awareness of electronic resources among researchers in research institutes and universities

2.4   Use of electronic resources among researchers in research institutes and universities

2.5   Scholarly publication output among researchers in research institutes and universities.

2.6   Self-management and scholarly publication output among researchers in research institutes and universities.

2.7   Awareness of electronic resources and scholarly publication output among researchers in research institutes and universities

2.8   Use of electronic resources and scholarly publication output among researchers in research institutes and universities

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2.11   Self-management and   use of e-resources among researchers in research institutes and universities

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2.2   Self- management of workers in an organisation

Organisation is defined in *Business Dictionary* (2010) as a process of interaction among a set of peoples that stay together to achieve the same goal. The B*usiness Dictionary* (2010) reveals that all organisations have an administrative system that controls the relationship that is expected to exist among the people in the organisation. The people in an organisation are   usually grouped into administrative structures with given assignments and powers to do their work. Organisation as revealed in the *Business Dictionary* is an open

system that creates interactions among the people and their environment. The information given in *Business Dictionary* portrays an organisation to be people oriented and usually with a goal. The attainment of a goal usually requires that people should acquire and utilise some unique features, among such features is self-management.

Self-management, also called self-performance in some books that documents knowledge on managerial studies, is the process of strengthening people with quality information and ability required to perform excellently in a trade till the person can be on his own in that trade. (Daniel, 2011) Self-management can be further explained to mean ability of an employee to think rightly for himself, so that he can do things better, through his effort, behaviour to people he provides services and co-workers in the workplace. All the thinking process is expected to be geared towards how to make the organisation achieve her objectives within the budget available at that time.

Explaining further, Daniel (2011) stated that in an organisation where an employer does not exercise self-management features, the employees will rely totally on the thinking or directives of people in higher authority. In a more elaborate explanation, Daniel (2011) said if a staff of an organisation does not have self-management features such a staff will persistently follow other people's views even when he has a better opinion. Therefore, the author established that any system where self-management practices do not manifest among the staff in that organisation, such a category of staff as expressed by Daniel will become robots. In that case, Daniel (2011) explained that the people will live without asking relevant questions. They will be without emotion and they will lack a sense of creativity. The people will essentially behave as they are directed to do.

The organisation, that has a system where self-management structure is operated, according to Charles and Henry, (2011) does not require a laid down procedure where seniority among workers will be established rather, the organisation will have a flat administrative system where many leaders operate and give ideas freely without the usual limitations of seniority. In this arrangement, everybody is seen as a manager and is listened to adequately. For higher efficiency Charles and Henry (2011) explained that all staff deliberately and continually improves their knowledge, so that they can contribute to the system immensely and other people can benefit from them while they also benefit from other people's view. Through this avenue as explained by Charles and Henry.(2011) creativity is fully allowed among the crop of staff in the organisation and the system expands in all directions without any dull mind but plenty of active minds. This type of administrative

system was recommended for 21st century organisations because according to them it allows for maximum utilisation of human resources and builds human resources to operate in any organisation, hence it was revealed as an approach that can reduce redundancy of manpower in any organisation.

In the traditional management style, as opined by Daniel (2011) an employee is constantly aware of the hierarchy and is expected to do exactly as he is told. The employee only learns something new when he is told to do so or when he feels he must learn in order to retain his job. The only time, according to the author, when the employee applies his wealth of knowledge is when he operates outside the system .In the self-managed organisation on the other hand, it is explained that the employee sets the hours of work and the hours he thinks will be required to achieve his goal for the organisation and still retains or improves his value with the organisation. He went further to explain that in a self-managed organisation, the employee decides the method to apply to get the work done for a good result, hence the worker applies the best of method that will enhance the growth of the system and his status.

Catherine (2013) in her article in Australian Financial Review expressed that many organisations are taking a renewed step to make their system embrace administrative system where self-management ideas are applied. This development is increasingly happening according to the author because organisations want increase and enduring profit and a system where the operational expenditure is continually reduced.

Catherine (2013) also stated that among the reasons why organisations embrace self-management style is that the operational system of organisation in the world are changing, the vision of modern invention in the world which continually leads to introduction of new technology, requires that the present day organisation must find people who are creative and can through their creative skills comply with technological changes to move the organisation forward. Catherine in her submission observed that lasting solutions to problems are achieved through scientific approach and innovations that are applied to every segment of the organisations.

In all these as explained by Catherine (2013) human resources play an important role , it was revealed that they think and act on behalf of the organisation, hence Catherine concluded that the best way to have the best from a human being is to give him liberty to speak and act through his initiative and creative mind.

In the articles in "Creativity at work" (2017) a book on fundamental guide to project management best practices compiled by "My Management Guide", it was revealed that the

application of self-management is becoming a globally acceptable approach and its acceptability was said to be on a very high side in many profit oriented organisations in the world. The book "Creativity at Work'' revealed further that the acceptance of self-management feature in management of organisations has become so impressive that organisations, particularly those that are profit oriented do hire personnel to train their workforce on principles of self-management The book creativity at work revealed further that organisations that embraced self-management practices did so because they have the view that it will improve the productivity of their employee and consequently the profit of such organisations will be enhanced. Added to that, it was revealed that the organisations see the process as a way to make each employee to justify his existence in the organisation and to decide if he really fits into the operations of the organisation.

It was established in the article that without the personal effort of an employee to develop self-management skills, that it will be a difficult task for organisations to get a hard-working employee. Hence, with the introduction of self-management feature among workers, it has become important that any worker who wishes to have a successful career in an organisation where he works and where self-management practices are put in place, such an employee will improve his ability irrespective of the condition of the operational environment so as to sustain his job.

According to Euniceeng (2013), self-management features improve an employee to develop the culture of communicating with people including co-workers in a polite manner. The author also added that self-management skills can improve judgment making processes, planning of every day schedule of an employee including planning and undertaking activities that will make an employee live a healthy life which will consequently enhance the contribution of the employee to the growth of the organisation.

The Community of Practice (2016) an organisation with the mandate to teach and instill self-management practices into the workforce of corporate organisations explained self-management as an alternative to the traditional, hierarchical method of organising what we see happening most in an organisation. According to the body of expert on self-management, there are some ideas that are keys to self-management philosophy. The idea according to the body of community practices are that people are happier when they are in control of their lives and work. The philosophy of self-management also believes according to the body of experts, that it does not make sense to give authority to the person who is literally away from the actual work being done. The philosophy of self-management was

explained to equally believe that when a set of good people are given more responsibilities they tend to flourish. The philosophy as explained sees the traditional hierarchical model that operates in organisations as not being innovative; hence it was equated with a poison which can kill or destroy an organisation gradually or instantly.

The Community of Practices (2016) in their explanation of the philosophy that guides the operation of self–management, revealed that there exists unchallengeable relationship around liberalisation of the mind of the people and wealth creation among people and it was explained that the philosophy of liberalisation can be associated with distribution of wealth and poverty around the nations of the world. The principle was explained to be true of human organisation in general. The emphasis of self–management principle as explained by the Community of Practices involve working together by employees through personal initiative, increased training of staff, sense of belonging to every employee, reduction or removal of seniority inclined decision-making process.

Self-management in a simple term according to the body of experts at community practice organisations signifies organisational style where the old function of a managerial staff namely: planning, coordinating, controlling, staffing and directing becomes the responsibility of all staff in the organisational settings . This is a substitute to what is meant for a selected member of staff. Based on this principle, each person in an organisation was explained to be personally responsible to forge his own personal relationship, plan his own work, and coordinate his own actions with other members of the organisation. The principle guiding the application of self-management has been explained to put on members of the organisation the responsibility to equip themselves with the requisite knowledge and skills to accomplish their mission in the organisation and they are expected to take their corrective actions with respect to other members when it is required.

A management enterprise called My-MG (2017) explained that the possession of self-management features by the staff of an organisation contributes to making the employees to be productive members of the organisation. According to this body, the possession of self-management features is regarded as the most worthy management approach best for an employee that has the aspiration to become more productive. The desire to be productive was highlighted as a factor that must prevail in the mind of a worker that has a career development projection. Based on the explanation, each employee should strive to develop and sharpen his self-management skills, because according to the management enterprise,

without personal effort by an employee to develop self-management skill, it may be difficult to have a successful career progression.

The management organisation revealed some self-management skills as being very important skills that must be developed by an employee who wishes to have a successful career progression. The skills are: disallowing pressure, creating solutions, information transfer, administration of situations, easy recall of situations and exercise. According to the management outfit, when an employee has a skill that makes him to avoid stressful situations such an employee will not fall into the usual errors committed by other members of staff when they are stressed out. According to the organisation, a staff member who is under pressure usually has low efficiency because of his low ability to think very fast and rightly and consequently, it was explained that in such situation such a person is likely to make irrational decisions.

The organisation further explained who an employee that desires smooth and successful career must be able to apply his self-management skill of problem solving to determine true the situation of things, create realistic possible probabilities to dissect the problem to arrive at an acceptable solution. The major demand to achieve quality decision making according to the self management enterprise is that the employee must be sober. Under a sober condition it was revealed that an individual will take the right decision in the toughest situation.

Efficient communication was discussed as a self-management skill that can lead to a successful career progression. The self-management experts at the self management establishment, in their discussion, explained that the way an employee communicates information to others goes a long way in developing good relationship with people within and outside the system and this will affect the employee's participation in team work. Possession of good communication skill was explained as an important ingredient that must manifest in the performance of an employee if such an employee will lay claim to possessing self-management features. Explaining further, the body of experts on self-management highlighted that when an employee is able to communicate efficiently any information to other people, the implication of it is that such an employee can share information with minimised possible distortion and in the fastest possible way. The implication of this skill to the organisation as revealed by the self-management experts is that the employee's productivity will be enhanced through good communication with colleagues and management to avoid wrong decisions and avoidable disaster in the organisation.

Possession of a good memory and its reflection in the day-to-day job performance of an employee is also described as an important self- management skill that can improve the productivity of an employee. It was explained further that an employee is expected to remember always the philosophy and routine that he needs to apply in taking decision in the organisation. The physical fitness of an employee was equally discussed as one of the self-management skills that support the productivity of an employee in an organisation. The self-management organisation emphasised that an employee must keep his body in good shape. The importance of keeping the body in good shape according to the self-management experts at the management enterprise is that the employee will feel healthy, and have robust nervous system. The implication of this is that the employee will be able to move around, do more things and cope with challenges.

Louis (2014), while explaining the importance of self-management managerial style to an organisation, stated that it makes employees to be aligned under a common organisational purpose. The employees according to Louis will constantly ask themselves some important questions to increase their vigour for higher productivity. The questions the author explained that employees will ask themselves always about the organisation are as follows; why does my organisation exist? Why was it started in the first place? What will happen if my organisation disappears today? Would it be missed? Answering these questions all the time, according to Louis (2014) will generate a spirit of organisational purposeful direction between the employees and management.

He explained further that in view of the purposeful direction that develop between the employees and the management, the organisation will evolve around employees with a common purpose and the employees will gain useful insight into what really is valuable work and that there will be a joint decision to add value to the work all the time. The author illustrated the purposeful co-existence that can exist between employee and management with the social life of ants. According to Louis, ants operate a self-management style in their colony. The ants have highly organised colonies. Sometimes, he said a colony of ants could consist of billions of ants, but despite their large number, ants do not have a distinct leadership hence they are regarded as animals that have advanced, effective and purpose-driven organisation. Louis explained that ants are self-managed and that ants trigger and interact in their local environment to independently guide their work decisions.

The process by which ants guide their own decision is possible according to Louis (2014) because all ants embrace a common purpose rule that each ant will drop the picked

grain together at a point to form a pillar. Based on the observable behaviour of ants, Louis concluded that it was clear that ants self-managed themselves in their environment based on the rhythms and connections in their environment. They have a common purpose; no leadership is needed to accomplish the task. According to Louis, the model has been applied to human context and it was said to be thriving.

From the reviewed literature on self-management, it can be deduced that self-management centres on giving opportunity to employees to understand their organisation, aspire to be interested to willingly contribute to the growth of the organisation by putting to use their innovative and creative mind purposely to achieve the organisation's goal and without bureaucratic hindrances. The management gives resources to support the dynamism of an employee to key into a purposeful mission understood and pursued by both the employee and the management. It is a good approach to utilise human resources to achieve the organisational goal. The application of self-management managerial style puts human resources above all other resources in the organisation.

The self-management managerial style and all the associated skills like setting of goals, critical thinking and self motivation are good for research system like the agricultural research institutes in Nigeria. The development of human resources particularly researchers in the research system to have freedom to do their research work and be supported with relevant electronic information resources along with required finance, other laboratory equipment and a motivating conducive environment will likely increase their collaboration, confidence, sharing of information, communication within and outside the system. The product of such purposeful interaction is likely to increase research and scholarly publication output.

The National agricultural research institutes as research organisations presently have different groups of human resources employed to perform certain functions and for administrative convenience and most often are employed based on the type of official duty assigned to the staff in the institute. The staffs are grouped into departments and supervised in most cases by a director who is expected to report the activities of his department to the Chief Executive Officer and take further instructions on most official issues arising in the department. Similarly, within each department, the staff is of different hierarchies and authorities, official operations flow strictly from the Executive Directors/Chief Executive Officer to the directors and consequently to other groups of staff in the department based on their level of seniority in the department.

This process of hierarchical authority which also makes it compulsory for the Chief Executive of the institute to consult the supervising agency and Hon. Minister in the supervising ministry on most issues before the Chief Executive can act creates a bureaucratic culture within the National agricultural research system. The process does not allow for much application of staff initiative on official issues. Permission has to be sought and obtained from a senior staff by a junior staff. Hence the self-management feature that allows for manifestation of staff creativity is not a popular procedure, so many actions could be delayed unnecessarily and the time to achieve some tasks could be prolonged unduly. To reduce the bureaucratic procedure among researchers in NARIs and the negative effect it may have on research activities, the NARIs' research system has to allow the researchers and other staff who work directly with them to use the principles of self-management in their research operations.

2.3 Awareness of electronic resources among researchers in research institutes and universities

The great innovation that is consistently witnessed globally in the area of knowledge administration, which consistently leads to quick and widely spread information sharing among interested parties through electronic networking, has influenced libraries operations in all sectors of learning and knowledge development. In view of the novel and impressive development in information industry, unprecedented change of interest is occurring among different information users, hence many of the information users are more interested in electronic driven information system than the former print information materials.

Kumar (2013) observed that electronic databases are becoming more valuable to institutions of learning and are also serving as worthy information materials that can be consulted together with conventional information materials that were consulted in libraries before the arrival of electronic databases. Among derivable benefits from the databases which is a new method of packaging information electronically as stated by Ebenezer (2018), are quick admittance of information seekers to the databases to have contact with wide and varieties of information that have no restrictions. The new information administrative system according to Ebenezer (2018) also provides opportunities to information seekers to get current information and the privilege to link with others. All the benefits associated with the electronic databases lead to enhancement of research and scholarly publication output.

Due to the popularity of e-resources, different studies are being undertaken to confirm the awareness of library users particularly lecturers, researchers and students who are largely users of academic and special libraries in universities and research institutes. In the study carried out by Radhakrishnan (2012) on consciousness of online information among lecturers at tertiary institutions in Coimbature, the findings showed that 475 (95.2%) participants have knowledge of the electronic database and 24 (4.8%) were not aware. The researcher in his study also went into finding out the level of awareness of his respondents on search engine for e-resources.

He reported that 498 (99.8%) were aware of google search engine. Also, 464 (93%) participants expressed that they have knowledge of electronic books 488 (97.8%) participants also confirmed that they have knowledge of electronic journals. The findings also confirmed that 238 (47.7%) participants have knowledge of the e-dictionaries. For e-theses, 240 (48.1%) replied that they were not aware of it. Also, 367 (73.5%) responded that they were aware of e-magazines and only 154 (30.9%) respondents were highlighted to have indicated that they were aware of online catalogues .Similarly, 79 (15.8%) of the respondents for the study have knowledge about EBSCO databases and 261 (52.3%) indicated that they were aware of Elsevier's science direct. Only 179 (35.9%) of the respondents were recorded to have indicated that they were aware of Emerald full text. Basically, from the findings, it could be noticed that many of the participants had knowledge of the databases and were happy with the types of databases in their institutions.

The proliferation of the Internet facility which is an enhancement to e-resources is said to be greatly expanding all over the world and a picture given by Eyitayo (2008), also indicates that 3.0% of Africa population is connected to the Internet, 35.8% in Asia, 28.3% in Europe, Middle East 1.7%, North America 20.9%, Latin America/ Carribbean 8.7% and Oceania/Australia 1.7%. It is expected that the statistics must have improved highly all over the continents. However, based on the level of access indicated above, Eyitayo asserted that the Internet is being connected almost everywhere through diverse approach in Africa. The author added that the studying arenas, public information centers are some of the places where the Internet is accessed.

The author also revealed further that the most prominent section where application of the Internet is most noticeable is the education sector where he said it manifested in various e-learning centers in universities across Africa where the Internet is used for educational purposes. The author listed them to include; University of Namibia, Namibia Open Learning

Network Trust, University of Botswana e-learning support center and University of Cape Town. The author also revealed that Ethiopia has networked 500 secondary schools and all her 12 universities. Other countries like; Botswana, Cameroon, Gambia, Guinea, Ivory Coast, Mauritius, Mozambique, Namibia, Nigeria and Tanzania were revealed to have introduced a variety of educational programmes which are being enhanced by the Internet. Generally, it was expressed that Africa stands to be a great beneficiary of the Internet in different areas of economic growth.

The invention of ICT is observed to be felt across the globe and the spread is said to have caught up with everybody round the world including countries like India. In their observation, Radnakrisdhan and Babu (2012) expressed that the speedy development of electronic databases and other ICT in the last few years have changed many processes of doing things and have assisted in solving many problems that looks hard in the past. According to the observation of these ICT experts, the invention of information technology has contributed positively to operations in libraries drastically and the technology is contributing to the development of other disciplines like science and engineering.

In his explanation about e-resources awareness in academic environment in India, Thanuskodi (2013) revealed that the India Ministry of Human Resources Development (MHRD) gave a recipe to universities and research libraries that have stopped the acquisition of scholarly publications due to what they refer to as scholarly publication crisis. The term scholarly publication crisis was explained to refer to the rise in the cost of research which was said to have risen much faster than the rate of inflation, hence, the India government provided a consortium to universities and research centers to give succor to what was described as research publications crisis in India.

Similarly, Ugah (2008) in an investigation conducted at the Federal University of Agriculture Umudike, Nigeria, found out that large a number of the respondents who are library users have awareness of the presence of databases in the library system of the university, but they are not satisfied with them because, according to the researcher, the respondents claimed that the process of accessing the material is unsatisfactory to them. This further confirmed the view of Alma and Sheridan (2009) that availability does not necessarily connote accessibility.

Agboola and Bamigboye (2011) in their study focused on three Faculties of Agriculture in Nigerian universities. They revealed in their findings that students have knowledge of the presence of the information materials in the library. The respondents were

said to use mostly textbooks among the print information materials that are available and the essential electronic agriculture library (TEEAL) was consulted mostly among the electronic databases in the library.

Ibegwan, Ogunyade and Ajuwon (2013) carried out a research on awareness of online services for accessibility of information resources by scholars in two health institutions in Nigeria. The outcome of the investigation showed that 80% of those that participated in the investigation, who are teachers at different stages of their career signify that they have good perception of the electronic information resources in the libraries of the health institutions studied.

However, the finding of Ojinama (2013) in the investigation conducted on the presence and consultation of scientific online information system in some chosen agricultural libraries in Nigeria, showed an improvement over the view expressed by the respondents of the study reported by Ibegwan, Ogunyade and Ajuwon (2013).Ojinama (2013) reported that the e-resources were appreciated by users of the university libraries selected for the study. The findings from the study showed that 50% of the participants' consulted the online information system because the library management created awareness education for the users and when the users used it they reported that it saved time, 25% of the respondents said it provided them with current information. The finding of Nwokedi (2013) about the digital library of the University of Jos, Nigeria showed low knowledge of the electronic databases among the students of the university.

In some agricultural research institutes in Nigeria, Ogunjobi and Fagbemi (2012) studied the consultation of the ICT and online services by scientists in the agriculturally based research institutes located in Ibadan, Oyo State, Nigeria. Four research institutes were used as case study. They are Cocoa Research Institute of Nigeria (CRIN), Forestry Research Institute of Nigeria (FRIN), Institute of Agricultural Research and Training (IAR &T) and National Institute of Horticultural Research (NIHORT). The findings revealed that the only way the researchers said they contact with electronic databases was through the Internet as none of the libraries subscribed to e-resources databases. The researchers expressed that the institute's infrastructure failed to provide the required Internet services in the institutes. The available bandwidths were not the dedicated type, hence the services received were poor and most researchers in the institutes had to acquire personal modems which were not as efficient as the Internet service they would have accessed from their institutes.

According to Okore, Anaehobi and Haliru (2015), diligent intellectual inquiries are the foundation for the growth of a nation. To embark on diligent examination, it is revealed that a researcher will need many resources and one of such is desirable information that will support productive research required for the development of the country. Having awareness of the presence of desired knowledge in a library by a researcher as explained by Okore, Anaobi and Haliru is a problem partly solved. This prompted Ojedokun and Owolabi (2003) to say that, researchers from all discipline do rely on accessible scholarly information to enhance their scholarly publication output.

To further enhance the work of a researcher Onwueme and Lulu-Pokubo (2017) explained that researchers needs to have knowledge of new and reliable information sources that will make them achieve greater heights in their research works. These authors explained more that scholars who have knowledge of sources of information that is comprehensive, concise, of interest to them and they can access and share the information without much stress, such information environment was explained by Onwuem and Lulu- Pokubi (2017) as an information environment that can make a researcher succeed in his research work. The authors added that such information environment can only be attained from an information system that is electronically driven and such information system was explained to include electronic databases.

Electronic information resources are in many forms and from different sources. Among them are open access electronic resources which Ojedokun and Owolabi (2003) described as a valuable information material for collaborative research among lecturers and researchers in research institutes and universities. In his explanation on the importance of awareness of e-resources among researchers, Oketunji (2001) stated that the Internet connectivity is the world most effective ways of communicating among researchers if matched with the conventional approach. Owolabi and Atama (2007) added that researchers, particularly those in Africa must be fully aware of the potentials that exist in electronic information, especially, the Internet and open access electronic resources to boost the continent's intellectual enquiries and development potentials. The awareness of open access was said to be very important.

In the view of Christian (2008), open access electronic resources awareness is not impressive among lecturers in the University of Lagos, Nigeria. The low awareness of open access databases in the institution and some other academic institutions was equally confirmed by Oyedipe, Adekunmisi and Akinbode (2017). In the study conducted by Okore,

Anaebobi and Haliru (2015) on knowledge of open access database among researchers in agricultural research Institutes in Edo State, Nigeria, the results obtained from the research work indicated that the highest source of awareness of relevant scientific literature by researchers at the National Institute For Oil-Palm Research (NIFOR) and Rubber Research Institute of Nigeria (RRIN), the only two institutes relevant for the investigation in Edo state was through oral communication and interaction with colleagues. The study also established that researchers at NIFOR and RRIN have knowledge of open access electronic database and others like Online Access Research in Environment (OARE), institutional websites, TEEAL, HNARI, electronic books, e-journal, e-bulletin and AGORA.

The findings of Nazir (2015) also confirmed the need and importance of arousing the interest of lectures and students on electronic databases in different categories of libraries in the university. According to Nazir, results from the research investigation showed that lack of awareness of different kinds of electronic information resources accessible by the respondents who are part of the users of the library of Kashmir University and lack of library assistance to guide the research scholars and students contributed to low consultation of databases by the respondents.

Similarly, Lydia (2014) investigated library clients' knowledge perceptions and consultation of electronic databases at Makere University Library. The findings further revealed the importance of library client having knowledge of online databases in their library. According to the respondents' comments, the awareness created by the university library management contributed to the frequent consultation of the electronic databases in the university library. Lydia (2014) therefore commented that creation of awareness among users about library holdings on electronic information resources in the library is one of the ways the university library can demonstrate value for university stakeholders, by making the library stakeholders to maximise the consultation of the library holdings to enhance their academic work.

Further result to the findings from the study conducted by Lydia (2014) on library patrons' feelings and level of consultation of Makere University Library information collections, showed that the library patrons of Makere University have information about the following commitment rendered in the university library: photocopying, reference and lending of library information materials to qualified library users. The library's commitments the respondents expressed they did not know are document delivery services, delivery of recent information to relevant researchers, and delivery of information needs of the library

patrons. The findings revealed low awareness of digitization of library collections and only 46.8% of the participants were reported have the knowledge of electronic database services that exist in the library.

As a result of the part of the outcome of the research investigation reported, it can be regarded as a worthy step to hold to the opinion of Popoola (2008), who made some suggestions about how libraries can successfully create awareness among their users. He said library management should create faculty awareness about library holdings and other products that can be accessed in the university libraries. It was also suggested that library management in research institutes should do the same too. To achieve effective awareness, Popoola (2008) opined that awareness of information product in the library should be created using programmed interactions with the researchers, regular users' education, conducting users round the library at regular intervals, acknowledging users who use the library regularly by rewarding them, creating discussions with researchers in different divisions in the academic system.

The importance of creating awareness of library information products like electronic information resources among target users should be seen as an investment on its own and should be financed adequately. Also, strategic approaches that are deemed relevant to the environment of the university and research institute should be used at every opportunity by the library management to draw attention of target users to library information product acquired to improve the scholarly programme of the center of knowledge and learning. The creation of awareness is an area that must be explored maximally and with modern tools of creating awareness. If the processes of creating awareness are done properly, they are expected to improve the image of the library among members of the university and research institute communities. It may also enhance the status of the library before the university and research institute management where the library draws her financial support.

2.4   Use of electronic resources among researchers in research institutes and universities.

Access to electronic resources among researchers is said to be rapidly increasing and knowledge in electronic databases is forcing researchers to acquire skills on searching, selection and consultation of different kind of information materials (Tyagi, 2011). The twentieth century, according to Angello (2010), was described to have been restructured by drastic changes that originated through the application of ICT technologies to everyday

activities. The invention and application of ICT was described to be the modern and noticeable happening in the world of scholarly information .Over the last few years, a significant transformation is said to be noticeable in library acquisition policies and in management activities. Published information materials were explained to be speedily replaced by electronically packaged information materials (Salam, 2007).

In the same vein, Abinew and Vuda (2013) stated that the transfer of interest from published information materials to electronically packaged information materials is drastically popularising electronic information resources among most library patrons and also contributing to its rapid growth and spread as a reliable information tool for enhancement of research and scholarly publication output. Hence, from various studies carried out, it is observable that there is a rise in the number of researchers and lecturers consulting the online databases in universities and research institutes. In the study conducted by Crawford and Doge (2000) on the consultation of online databases at Glasgow Caledonian University Library, the result showed that most of the respondents who were lecturers used PC rather than MAC and 18% were said to be used to CD-ROMs usage while 13% used online databases. This showed some degree of knowledge and consultation of online information system among the participants in the study who were university lecturers.

Similarly, Zhang (2001) attempted to find out how researchers consult, make reference, and rate electronic databases when conducting intellectual enquiries. The outcome of the investigations showed that for eight years authors that are making reference to electronic information resources when conducting research have increased significantly. Hence it was concluded in the study that electronic databases have become highly accepted and there is an increased desire among researchers to search for information from it to enhance their research and scholarly publication output.

Thanuskodi (2011) in his work titled "User awareness and use of online journals among education faculty members in Coimbatore District" established that at this moment globally, we are in the era of application of knowledge and to sustain the era we are presently going through, information has a vital role to play. Hence, any form of advancement in the present age according to Thanuskodi (2011) is based on knowledge and it is usually driven by quality information which is obtainable through electronic databases. Electronic databases according to Thanuskodi (2011) could serve as main source for lecturers and other researchers to get concise and comprehensive information for their research, so that they can contribute and remain relevant in the knowledge era.

Several investigations were done to determine the impact of online databases on lecturers, schoolchildren and other researchers. Madhusudhan (2010) being among the researchers who have conducted such a study reported in one of such studies that seventy-eight percent (78%) of the participants are of the opinions that the consultation of the university electronic database has caused an impressive reliability impact in their intellectual enquiry processes hence the researchers requested for current notification actions and more online connections. Electronic resources were equally observed to have improved the value of libraries and the process of searching for information by library users in Nigeria. A study by Oduwole and Akpati (2003) discovered that the interest for the consultation of database manifested highly within large number of the academics in the university system and as a result of immense benefits the participants derived from the information materials, they requested for more avenue to access the information tool so as to further improve their research work and their scholarly publication output. In respect of this, Tyagi (2011), Moin and Panda (013), and Bokunmoy, Victor and Loveth (2014) explained that the consultation of electronic databases are only as good as the quality of e-resources that can be accessed and the existence of facilities to aid its use always which was explained to include the number of terminals and adequate linkage of the terminals to create a good network system. Also, the possession of necessary basic computer skills, knowledge of consulting it and knowledge of defined problems in intellectual enquiry being investigated to facilitate the use of correct search terms to access desired information were also explained. The acquisition of necessary computer and information searching skills was confirmed as a means by which the frequent consultation of online database can be facilitated.

Mishra (2011) also identified some factors motivating use to include; the level of importance the research scientists attach to the electronic databases, how beneficial it was to the researchers and how relevant the content of the electronic databases is to the information needs of the researcher's on- going research work. The level of consultation made to electronic databases was reported to be increasing. This was confirmed in the results of investigations on electronic journal usage among researchers in India, Singapore and many other Asian countries.

Prangya and Rabinda (2013) also reported the study conducted in Indian Institute of Technology, Delhi, and the consultation of electronic periodicals was said to be on the increase. This was attributed to increased knowledge of the electronic databases among the patrons of the library. These library clients were reported to be consulting the electronic

databases persistently due to easy accessibility at different places in the institute including hostels and departments, instead of being forced to visit the library before they could access the service, hence, it was reported that library users are decreasing. The decrease of library users was attributed to availability of their desired information in a more convenient source.

In Nigeria, Aniedu and Uzuegbu (2014) revealed that apart from the availability of desired information, other factors like age of users, and self-efficacy promote use of e-resources. Miller and Moss (2001) also expressed that females tend to find it more tedious to access information on-line. The author also revealed that the consultation of electronic databases by researchers was found not to be total; this was attributed to lack of the e-resources in some institutions or lack of necessary skill to use the system to access information. In their study to determine the direction of online information consultation and recall processes of information by researchers, Selhi and Panda (2012) discovered that in the Indian University, conventional library service where print information materials serve as the main source of attending to the information needs of library users still operate on the same level with online information services, this is because the users make use of the two types of information sources concurrently.

In the study conducted by Ezeala and Yusuf (2011) which focused on how users are satisfied with the library collections and operations in NARIs, the findings showed that NARIs scholars were not enjoying the online information system in their institutes' libraries. The result showed that 72% of the respondents who are researchers from NARIs indicated that the database in the NARIs libraries was not relevant and consequently it did not meet their information needs. Though the e-resource facilities are not adequate in many NARIs libraries as gathered from the study, there are indications however, that many lecturers in Nigerian universities and researchers at different research institutes in Nigeria have knowledge of the existence of online information services and they are interested in using the information resources for their academic activities.

Additionally, in the study conducted by Egberongbe (2011) on the level of impact of the online resources at the University of Lagos, Nigeria, Egberongbe (2011) discovered that almost all the teachers (90.6%) and researchers (80.0%) preferred to consult electronic periodicals. Based on the level of consultation of electronic databases among teachers and researchers at University of Lagos, Nigeria, the chances are high that libraries of other Nigerian Universities particularly those owned by the Federal Government of Nigeria may have e-resources facilities like University of Lagos, Nigeria .This could have influenced the

use by many NARIs researchers. This is because most of the universities are located in the same town or nearby towns where National agricultural research institutes are located. Also, many of the research staff in NARIs attends some of the Nigerian universities for their undergraduate and postgraduate degrees and in the course of their studies in the universities, they are likely to have used online information system in their academic activities.The investigation conducted by Ogunjobi and Fagbemi (2012) on the frequency of consultation of the Internet and some other databases by research scientists in Agricultural Research Institutes in Ibadan, Oyo State, Nigeria shows that they are aware of e-resources databases, but they are more conversant with the use of the Internet. The electronic database they accessed in their institutes was AGORA which was freely given out to agricultural based research institutes and universities. The problem highlighted by Ezeala and Yusuf (2011) about hindrance to the Internet and e-resources database in NARIs was re-echoed by Ogunjobi and Fagbemi (2012) as both discovered that the libraries in NARIs do not have adequate Internet and database e-resources services.

Despite the noticeable development in the consultation of electronic resources among various scholars in the university environment of European, Asian and African countries, Mutula (2001) reported that most of these countries still lag behind in comparison to their western counterparts. The author reported that many libraries situated within these regions possessed only little contact to new computing communication technology and e-resources services. The study also highlighted some other constraints like inadequate computers positioned for accessing information in the institution' libraries and unreliable power supply. This was further corroborated by Jensen (2002) in (Eyitayo, 2008) that irregular or non-existence of electricity supply is a universal problem and the most noticeable hindrance to adequate consultation of the Internet most importantly outside urban cities in Africa.

Jensen (2002) elaborated further that many nations in Africa have very poor power sharing network that is mostly found in just urban areas with little manifestation in local areas and power rationing was said to be a common occurrence. The author expressed that this feature can be observed in some major cities such as Accra, Dares Salaam and Lagos. Hindrances to the use of ICT and consequently e-resources in different organisations such as educational institutions were revealed to include low knowledge and appreciation of the Internet service by administrators or Chief Executives who made ICT a luxury item. Another constraint to the ICT usage in Africa according to Eyitayo (2008) was the unaffordable financial implication of subscribing to the Internet and other e-resources. The author

expressed that more than half of the countries in Africa have the Internet access costing more than their average annual incomes and as a result of that, the Internet has so far had great impact primarily in major urban areas and those who have the financial muscle to finance it.

Ahmed (2004) investigated the level of consultation and determination of the feeling of the library users at the United Arab Emirates' Universities on the online information in their library. The findings confirmed that one of the factors that hindered frequent consultation of the information tool was the language used for the writing of the information. This was regarded as a problem because the library patrons conduct their research in Arabic language, while the information in the electronic information resources was written in English language which many of the library patrons do not understand. Hence, this serves as a disadvantage to library patrons in this part of the world. Similarly, the author stated that high academic teaching-load and added administrative work on lecturers in the university and research institutes are a disturbance to the frequent consultation of the information material. According to the author, where lecturers with their expected research obligations teach for a long time every week, this may not allow for enough time to search the database.

Non-availability of enough chance on the part of lecturers highlighted by Ahmed (2004) also formed one of the hindrances Ojinama (2013) discovered in the investigation conducted at the Federal University of Technology Akure, Nigeria. Factors like lack of awareness, non-current information to meet the research need of the users and cost of utilisation also serve as hindrances to the desire of researchers to consult the databases in the library. Egberongbe (2011) confirmed that many researchers do not have the necessary training that will make them access information easily from the electronic databases rather according to the author, many of the researchers engage in trial and error which was stressful and usually accompanied with little success. Similarly, findings in the study conducted at the University of Jos, Nigeria revealed that the respondents have necessary skills to use the computers, but they need additional training to efficiently utilise the databases in the institution's Library. This is equally corroborated by Uzuegbu and Uzuegbu (2013).

Paul (2005) considered the frequency of consultation of electronic databases as it affects some universities and research institutes in Tanzania. The study determined some things that can stimulate the consultation of electronic databases by library users. The results of the research work confirmed that interest of the participants for the study, awareness of the electronic databases by the respondents and quality of skills possessed by researchers to

access the databases were among the identified reasons that can influence the accessibility of the information material by researchers.

It can be noticed from the findings of the study that the emerging pattern from earlier investigations showed that the good association that was established   between awareness and accessibility of the electronic databases seems to change as the research work showed that 21% of the participants who had awareness about the electronic resources did not use them. According to the findings from the research work, the reason why 21% of the participants did not use the resources despite their awareness was that the electronic information material acquired in the library did not meet the knowledge demand of the scholars.

The investigation however showed that some of the online resources were used frequently by the researchers. According to the findings gathered   from the study, some of the online databases consulted frequently by researchers are the Internet and African Journal Online (AJOL). An analysis of the reasons given by the respondents for consulting online databases showed that 94% of them use the Internet for searching of literature and to communicate with colleagues for research purposes. The major challenges reported from the study that the respondents contended with while using the electronic information resources were inadequate computer terminals for users, slow speed of the Internet, lack of required skill to search information from electronic databases and occasional closure of the server due to technical problems. Another prominent problem indicated by the respondents for the study was unstable electricity supply.

From the aforementioned, it was observed that all the respondents established a great fear of sustenance of the electronic information resources in both institutions used for the investigation. The fear was because the electronic information system in the institutions were then sustained by donor agencies who were expected to hand over the information system to universities and research institutes after a while, hence the respondents were reported to have put in their comments that they have fear that when the system is handed over it may not be sustained to deliver the quality of information required in the libraries at the time the research was being conducted.

Kpolovie and Awusaku (2016) did an investigation on the application of ICT and attitude of lecturers at universities in River State of Nigeria. The findings showed that   the application of ICT by male and female lecturers was the same in respect of their attitude towards ICT used for research and teaching at those Universities. Similarly, area of subject specialisation did not show any significant difference in the adoption and use of ICT for

research and teaching among lecturers at the said Universities. The level of experience of the lecturers whether they were highly, moderately and less experienced did not have any impact in their adoption and use of ICT for research and teaching. The study also established generally that some factors can support the likeness and consultation of ICT by lecturers and researchers in an academy. Among the identified factors from the study are awareness of the ICT facilities, possession of the necessary skills and supporting infrastructure.

While the use of e-resources has been found to favorably assist researchers, students and other users to improve their level of productivity by improving production of scholarly publication output of researchers, the identified hindrances to frequent consultation of online databases need to be addressed by the library management so as to maximise the consultation of online databases among researchers, if the hindrances are attended to it will enable researchers to consult more of the online resources and justify the huge investment expended in acquiring the e-resources. This in turn will boost the quality of scholarly publication output by researchers.

2.5   Scholarly publication output among researchers in research institutes and universities.

Scholarly publication output is described as the process of creating new knowledge and disseminating it publicly to relevant scholars (Linda, 2014). This author revealed further that the performances of scholars in academic system have become easier to measure through scholarly publication output than other kinds of academic work like teaching, community engagement and other related assignments. Hence, the author concluded that research is not just the good standard of assessment but almost the only semi-reliable variable.

According to Abine and Vuda (2013), many studies have reported that production of scholarly publication output based on individual effort seems to go up with the status at work. The studies carried out by Aksnes, Rorstad, Piro and Sivertsen (2011) confirmed that professors publish more publications than other cadres of lecturers. Findings by the authors revealed that, on the average, male professors published 9.5 publications during a four- year period. Next are associate professors, they are identified to produce 4.8 publications; post doctors 4.5 publication while Ph.D students are indicated to have the lowest scholarly publication output of 2.9 publications. Similar patterns were said to occur for female researchers, but the average productivity was revealed to be lower for women in all categories.

The findings were based on four postulations. According to Kyvik (1991) and Costas, Vanleeuwen and Bordons (2010), the postulations include the following: the strength to conduct research work varies based on position or status group in the office, the officers with higher rank seems to have more time for conduct of research .Another factor suggested was that, it may be that those at the top position are usually more favoured in processes that involved funding of research and required help for conduct of research and the fourth factor was that professors may engage in more liberal discussions with all cadres in the system and this was explained as an advantage for professors to have the chance for a wider consultation. Kyvik (1991), in his submission argued further that all issues explained may have led to the advantage the professors have to be higher in scholarly publication than other cadres. The author also recognised cumulative advantage as another factor that could enhance scholarly publication output among researchers. He asserted that a cumulative advantage can occur in view of the fact that it is the group of staff that have access to higher resources and also enjoy commendations for their acknowledged work that continue to feature prominently in scholarly publications development.

A related reason also established by Kyvik (1991) is in connection with the organisation of the investigation procedures, which most often was explained to put the professors at an advantage over other group of researchers. The author explained this factor further by illustrating that the policy of the organisation might make a professor to control high number of people for mentoring which may consist of many Ph.D students, post-doctors and other researchers. Professors do have, according to Kyvik, more resources to facilitate their scholarly publication output. The resources highlighted were grouped into financial and human resources. This view was further corroborated by explaining that researchers that possessed many Ph.D students and master's students can have more scholarly publication than the others. This, according to the author is due to the advantage they have in respect of human resources they have at their disposal. For example, some of the people under mentorship will do much of the data collection and its analytical work for the scientist they are working with.

Furthermore, Mark and Abe (2009) in their explanations posited that the scholarly publication output of scientists is influenced by good scientific environment. Beards, Edwards and Sheileh (2009) also spoke of factors that drive scholarly publication output of researchers and the need to have good knowledge of managerial procedures that do occur in noticeable laboratories that are constantly associated with quality works. The authors

explained how they conducted interview for 12 world-class academic innovators; among them were Nobel prize winners like Mc Arthur Genius.

The authors were determined to discover what the laboratories that were persistently associated with quality works were doing that the other laboratories without good performance were not doing at all or not doing very well. The authors revealed that a clear pattern emerged from the interviews. It was discovered that a science research environment that promotes the following five elements is likely to have higher productivity level among its research scientists. The five elements are strategic decision, recognition of ability of staff and maximising it, monitoring of assignments and developmental programmes, standard approach to getting solution to difficulties and unhindered discussion.

Martin (2009) also in his writing titled "Research Productivity, Some Paths Less Travelled", revealed some factors that stimulate research scientists to have quality scholarly publication output. He listed six factors which are recruiting rightly, determination of the originality of the candidate, possession of good fortune, having good vision, being in good state of the mind and quality reasoning. According to Grove, Zald, Lebow, Snitz and Nelson (2000), the process of recruitment is often not done in most effective method. Biases of different kinds, some of which include familiarity, sex, ethnicity and age were listed to have effect on who to consider for research position appointments. Apart from defective approach to recruiting researchers, the authors also explained further that interview remains the mainstay of selection procedure despite its acknowledged weakness.

However, Martin (2009) concludes that recruiting good scientists as researchers can improve the conduct of research and productivity through delivery of technologies and publishing of research findings in scholarly publications. The author hinted that sometimes successful research scientists are hired into administrative roles which end up having a detrimental impact on their research efforts and consequently in their scholarly publication output.

Ahmed (2004), in his view said that online databases are good but very costly. Nevertheless, he concluded that a researcher that desires to publish in scholarly publication output must appreciate the need for relevant information and seek for it. Such information should be timely, concise and comprehensive enough to boost his research work and communication of the research outcome in scholarly publication output. Aniedu and Uzuegbu (2014) equally maintained that electronic databases have more benefits than conventional traditional print-based resources. Some of the advantages highlighted include being a source

for regularly updated scholarly information that is good for research work. They support research work immensely because they provide information without limitation of space and boundary.

Another standard way that makes research scientists to increase their research activities and produce quality scholarly publication output according to Martin (2009) is incentives. He explained part of the incentive to include teaching relief, promotions, higher status, praise and impressive salary, among others. Jacobsen (1992) discovered in his study that when workers or researchers are paid handsome wages it will serve as an inducement for hard work and consequently it will lead to enhancement of workers' productivity. Apart from this, payment of good salary to researchers according to Jacobsen will assist establishments to retain their workers and they will become experts on the job and become productive to the establishment, on the other side Martins (2009) revealed that workers can be attracted to other establishments if the payment is better and they exhibit the skills they had earlier acquired to the advantage of the new employer.

Similarly, Jacobesen (1992) explained that promotion can serve as an incentive for doing research but promotion according to the author also means higher salaries from the employer for the indefinite future. Beyond the cost implication associated with incentive as a way of promoting research and publishing in scholarly publications, Macleod (2010) revealed that incentive system could cause decline in quality of research and consequently in scholarly publication output, which are outcome of the research work done. Macleod stated his experience in the application of incentive to promote research and publishing among scholars in South African Universities.

The incentive system was described to work as follows. If a scholar publishes in a reputable professional journal, books and in conferences compendium the researcher will get a portion of the money incentive presented by the government to the institution where the researcher is working as reward for the publication. However, the author highlighted that the researcher may pocket some or all the money given as incentive after deducting tax. In some of the universities, the money given to the researcher as incentive may be placed in research account for him, so that it could be used by the researcher to further his research work.

However, Macleod (2010) remarked that the incentive system was counterproductive to scholarship. He explained that the incentive system encourages what the author described as *Salami-slicing* publishing. By this he meant that issues that are supposed to be published as an article by researchers may be divided into many articles, so that the researcher will have

many published articles that will lead to being given an award. The author also highlighted that the process of the award of incentive discourages collaboration and team research. This is because, in the view of the author, in the reward system, each contributor is supposed to receive from the award based on the assessment of the percentage he contributed, so the award will not be for one of the authors but all of them based on their level of contributions. While a sole author based on the process takes 100%, the reward is shared among the authors of co-authored publications. In view of this, it was explained that most researchers are always reluctant to engage in creating processes that will make them work with other researchers, so that they can jointly publish and shared the reward that follows.

In their opinion, Kenneth (2009) and Macleod (2010) further described the incentive system to enhance research and scholarly publishing among researchers as winner takes all phenomenal. The authors explained that while some researchers were said to have won awards and are rewarded with good things like elevation of their status and increased grants, the losers were not given any considerations. Hence, the system was viewed by the authors as being disincentive to losers and consequently brings shame to them and according to Kenneth (2009) shame is powerful and it generates low-esteem emotion in the workplace.

However, for sustainable research growth self-driven motivation is revealed to be more rewarding than motivation that is driven by gift and applaud by an outsider. This is further illuminated by Martin (2009) as he explained that external rewards have a declining impact. According to this author, people tend to appreciate motivation that is associated with gifts, increase of wages as an established policy and undermine intrinsic motivation which Tongai (2013) highlighted is worth encouraging for enhancement of productivity.

Intrinsic reward according to Thomas (2009) makes an individual to see and believe in an organisation as the work being done is part of his own natural self. It is explained further by Williams (2013) that intrinsic reward determines the level of selflessness the individual contributes to an organisation. In analysing the process of operation of intrinsic reward, the author revealed that self-management is supposed to form part of intrinsic part of workers in an organisation. They are required according to the author to use their experience and intelligence for directing their activities with the purpose of accomplishing crucial organisational goals.

Other areas where the author expressed that intrinsic reward can manifest in workers include sense of meaningfulness in which the worker feels the importance of the goal he is trying to achieve. This was explained by the author as a drive to make the worker believe that

the path chosen by him is worth his energy and time. It can also manifest in the sense of choice given to the staff in which he is given the freedom to choose the method in which he wants to accomplish the desired goal. The sense of ownership and competence are also said to be part of ways intrinsic reward can manifest.

Martin (2009) stated that through manifestation of intrinsic reward, committed scholars, without minding the prevailing condition will put in their best ability in the performance of their research activities because of the inner love they have for research. The reward is said to also support them naturally to discover and develop knowledge and become part of socially worthwhile enterprise. The enhancement of research activities and scholarly publication output among research scientists can be boosted higher if intrinsic reward is developed in them.

Based on this, the author expressed that the research scientists should be meaningfully and purposefully committed. Also, they should be encouraged to choose the best way of fulfilling that purpose without compromising integrity. They should make sure the right skills and attitude are put in performing the research work and lastly, achievement of progress along the work should be steady to achieve the purpose. Martin (2009) revealed further that when research scientists are intrinsically boosted, some of the skills and habits that are required to support research growth and scholarly publication output will be gradually learnt and mastered. He gave examples of the skills and habits in this regard to include writing, happiness, creativity, pursuit of good health, wisdom and he added that with the quality of purposefulness from the research scientists, luck, which the author described as the spirit of expecting good fortune will follow the effort and through that much is likely to be achieved.

Robert (2015) documented that he was a researcher that had spent many years investigating scholarly writing. He noted that writing was important for enhancement of scholarly publication output. According to him, the processes of writing journal articles and text books must be learnt because publication is an important yardstick to assess the level of productivity of researchers where findings are communicated and placed on record. But, to this researcher, there is another perspective to writing. In his view, "writing creates good ground for quality thinking; growth, creating knowledge divisions and confirming the content of knowledge and sharing them with others". Hence, writing skill must be intrinsically imparted in a researcher and so, the decision of researchers to postpone writing of scholarly

publication till weekends, holidays, semester breaks, sabbatical or retirement should be discarded.

He advocated for a different approach and the highlights of the approach were writing all the time without stress; he suggested 15 to 30 minutes every day. Robert revealed that he discovered in an experimental research he set up that new entrants to lecturing who were inducted to write in bits but regularly, published papers in multiples of four within a year more than researchers who stuck to the idea of creating a bulk time to write their published works. Furthermore, it was revealed that those who were held accountable for daily writing approach had nine times the output of block time writers.

Silivia (2007) expressed that writing is like practising for a sporting event, in this case, daily training is said to be far more helpful developing stamina and patience than instant daily writing. In this situation, the most important element to be related with research enhancement and scholarly publishing is not only intellectual ability but also endurance.

Creativity is another intrinsic skill and habit which Silvia (2007) explained should be intrinsically promoted among research scientists to enhance research and their scholarly publication output. A creative mind was explained to have knowledge to experience the earth in another approach, discover new things, create relationship among elements that seems to have no connection and generate better situations. Happiness was equally identified as one of the intrinsic factors that can enhance research activities and energies the individual research scientist needs in order to have to his credit quality scholarly publication output.

Chang (2005) expressed that happiness may enhance good outcome in an endeavour rather than the other way round. In his study, he explained that, people with a joyful mind perform better in interacting with other people. They are also explained to have better working ability and good healthy life. Chang did a review of 225 case studies on happiness and success. The researcher found happy individuals ambitious to take new steps that will give them higher opportunities and strengthening their minds to solve problems to attain greater heights so that their happiness can be increased and sustained.

In its own right, good health is said to be good for research productivity and scholarly publication. The connection according to Ludington and Diehl (2005) is that people who have a healthier lifestyle are explained to likely have fewer illnesses and because of this they may have more time to think, observe, propose research topics and work towards conducting them. Healthy people are also predicted to likely having more energy which can maintain

research effort. In the same way, they are linked to having a higher chance of living longer, with less disability; hence they are expected to have a lengthier research career.

Stressing further, the authors in their bid to reveal more of features that promote productivity commented that joint effort of committed people with like minds will bring out quality products. It is on this background that Martin (2009) brings to light the role of crowd wisdom as a factor that can enhance research and publishing in scholarly publications among research scientists. In his view, Scott (2007) did not doubt the importance of combined efforts of dedicated minds in achieving solutions to a task. The author rather confirmed it by expressing that joint deliberations from group of committed intellectuals can lead to breaking of new grounds in research.

Luck normally manifests in most life endeavours in which man engages himself and Martin (2009) explained that researchers do occasionally acknowledge the role of luck in their research activities. The author highlighted the story of some chemists of whom a test tube fell from the hands of one of them by mistake and through that an incident happened which was observed and eventually led to new discoveries which started while the chemists observed unusual colours on the ground and from there trial experiment started and from that incidents new grounds were, according to the author broken.

Wiseman (2011) a psychologist, was revealed to have engaged in an investigation which was meant to discover what brings good luck to people. In the course of this, he tried to experiment on variables like character, personality and belief among those who proclaimed themselves lucky in the world to determine if the variables were responsible for bringing good luck to them. At the end of his experiment he said good luck gets to people who seek for information and use information very well for the situation of their life. In his findings, Wiseman also discovered four things that make lucky people differ from those that are regarded as unlucky. The psychologist called the items the principle of getting luck.

The first among the four principles as stated by Wiseman are design, observe, and perform actions based on possibilities and then listen to your mind and take active steps to improve intuition. The second principle was how sensitive people are to what persistently occur in their minds, if well managed according to the psychologists can stimulate the direction of a researcher than logical thinking will do. The third principle of luck acknowledged by this researcher is to be an expectant of good luck. According to him; people who are determined and pursue success and expect it are more likely to achieve it.

The fourth principle of luck, he highlighted, is to turn bad luck to good luck and he illustrated them by saying that when a paper is submitted for publication and it is rejected, the application of the fourth principle of luck by the researcher would be that the rejection was an opportunity to improve it and publish it in a more suitable journal. Wiseman concluded that good luck need not be entirely a matter of fate but can be fostered. He highlighted that researchers potentially have much to gain by acting on contacts or ideas. This, he said, can make a huge difference in research, technology invention and scholarly publication output of a researcher.

2.6   Self-management and scholarly publication output among researchers in research institutes and universities

The chances of fully achieving a set goal by an individual are higher if the person has self-management features which could be referred to as self- control. (Chen Yu, and Chen Chen, 2012). These authors explained further that self-management skills are important traits an individual must allow to manifest in all processes designed to achieve a task. This view was corroborated by Hamlin (2010) through a document titled "six keys to career success". The author explained that the greatest among the six keys that can help individuals to stand out in their career is self-management. According to Thompson (2009), intelligence quotients contribute a mere 20 percent to overall success of individuals in life; the rest depends on individual emotional intelligence. The author explained further that the intelligent quotients might get an individual hired but it is the emotional intelligence that will almost certainly get the individual promoted.

The magical power of emotional intelligence is said to be accompanied with four features: having good knowledge about one- self, ability of an individual to control himself, creating good relation with people and working to sustain good relationship. He ended it by revealing that self-awareness and self-management skills can motivate an individual to win every time in any situation. In the view of Sasson (2010), when self-management skills are applied with high intellectual ability, it serves as a reinforcement that will strengthen such an individual to increased courage that will eventually lead to attainment of success. Sasson (2010) continued in his explanation of the importance of self-management to attainment of success in any task, he revealed further that the possession of self-management skill can support people to conquer irrational preoccupations, habit that damages, unpleasant emotion

and other attitudes that can hinder attainment of a set goal. He also expatiated by saying that self-management improves association, encourages calmness and endurance.

Doug (2010) and Sasson (2010) agreed that self-management skills possessed by an individual can make him give more attention first to hard work, thereby withdrawing from early enjoyment and pleasure, so that he can acquire knowledge and relevant skills to face future challenges and achieve enduring wealth and a sustainable life. On career commitment, Mindtools (2014) emphasised that employee who attach importance to their career growth, by attending relevant trainings for higher knowledge and skills will be highly productive and consequently they will have a successful career, compare to their counterparts who did not do any meaningful thing to enhance their career. They explained that devoted employees who enhance their career will happily invest in it by creating time to study more to acquire new exposure and skills.

The authors further expressed that employees who are committed to their work will put the goal of the establishment in mind all the time and take steps to attain the set goals without allowing any obstacle to hinder their desire to achieve the set goal. Greater effort and perseverance, which are skills associated with self-management as described by Edwin (2002) and these skills were explained by the author that they generally lead to higher performance and attainment of set goals.

Research in agricultural science is best conducted in multi-disciplinary approach and the collaborative research work that emanates among researchers of like minds from the same environment; nations and other countries are encouraged all the time to attain the global food security (Sullian, 2011). In furtherance to multi-disciplinary approach that is associated with research in science, Bozeman (2003) in this paper titled "the impact of research collaboration in scientific productivity" brought to light the importance of teamwork in research through collaboration among research scientists. It was expressed by the author in the publication that increasing interdisciplinary, complex and costly characteristics of modern science seem to make scientists get involved in more collaborative research activities.

Most studies on research collaboration according to Bozeman (2003) confirmed that collaborative activity increases research productivity. It was further established by Woodcock (2013) that self-management skill helps to motivate the individual to build confidence, manage time effectively, work with other people to achieve desired result; hence the collaborative working spirit which is emphasised in scientific research can be easily achieved through the possession of self-management skills by the parties that formed the team.

Wagers (2013) in his writings on twenty benefits of collaboration a researcher cannot ignore, stated that it is evident that the research scientists who have self-management skills can be beneficiaries of the twenty listed benefits of collaboration which include higher impact scholarly publications output, increased creativity, consistent career growth, mutually shared work, appreciation of criticism and ability to bring more experience to bear in efficient learning. Others listed include acquisition of wider array of techniques, deeper research, and possibility of more funding and higher number of scholarly works to be published. Also listed among the benefits of collaboration are opportunity for new jobs, patenting of technology, possession of ability to spinoff company, fun, knowledge of what others are doing, less risk and agility.

The last two of the benefits listed by the author are sustenance of spirit of adaptation and impressing investors and funding agencies. Every researcher is encouraged to see each of these benefits as the reason why research scientists should invest in acquisition of self-management skills so as to possess the skills to collaborate with others in a team work because according to Wagers (2013), collaboration is a proactive investment that pays enormous dividends, hence the mathematical expression by the author for collaboration is ''collaborate less effectively and the dividends will be less. Optimise collaboration and your returns will out- step your investment''.

Self-management is described as the 21st century management style. Sunrise (2016) explained that self-management involve equipping people with adequate information and other enablement that will make performance of a task easy and achievable. The individual empowered with information and skill is expected to recycle the information and skill and add value to the information overtime, till he is skilful enough to be called a master in that area of endeavour. Therefore, self-management was explained by Sunrise as a process that involves the individual thinking for himself, on how to improve something in him.

The required effort of an individual thinking for himself for improvement is expected to manifest in different actions displayed by the individual when performing his duties. Some of the actions expected to manifest in the individual that was empowered as explained by the author include relating with other people when performing his duties, relating with other people who need his services, how he can relate with colleagues at work to achieve various objectives within the budget available at that time which will lead to increase in agricultural technology invention through scientific research and quality scholarly publication output.

Self-management style according to Sunrise deviates from the traditional management style which he illustrated as a process where the superior officer in an organisation points a gun to the junior staff working with him and says "do this or else" you will face the consequences. By the traditional management approach, an employee does not have the opportunity to express his desire to be noticed as a human being who has the ability to think on his own and as an individual who has the ability to evolve new things that will facilitate good life or development.

What organisations that are established to find solutions to human problems require according to Sunrise are more people with self-managing techniques so that they can have opportunities to apply more than ever, their creativity, emotion, rational skills and knowledge to solving problems to improve the society. Further on self-management, Sunrise (2016) revealed, from the book titled: "Self-management, the 21st Century management style", that self-management is a management style that was developed to increase the productivity of employees and make them have unhindered opportunities in an organisation in order to contribute to solving problems for better human environment.

Research in general terms according to Wadesango (2014) entails varieties of investigations structured to give an acceptable answer to a burning issue through a globally acceptable procedure. Researchers in NARIs are employed to find immediate and long-term solutions to problems in different areas of agriculture for food sufficiency and national economic growth. The attainment of their research objectives requires individual and team work efforts to improve on their research work and publishing of scholarly publication output. To achieve this, they are required to change from the Nigerian public service bureaucracy which requires a staff to operate strictly on the basis of instructions given by the superior officer with little or no opportunity to do the work on the basis of his own creativity and intellectual ability.

Researchers in agricultural research institutes in Nigeria need to acquire self-management skills and apply them in their researches works for good scholarly publication output. The self-management skills to be acquired by researchers in NARIs for higher productivity according to Sunrise include: increased happiness, desire to understudy colleagues so as to gain from them, a feeling of greater belonging and value in the organisation, freely obtaining and giving help when required. Consequently, the author stressed that the attainment of self-management skills by researchers will lead to greater sense of accomplishments and higher performance of researchers and easy supervision of the work

by mentors who are expected to make sure that all that processes are followed to get the work done properly and the mentor in making sure the work is done properly, will allow good decision processes to take place, which require sharing decision making across all groups of researchers, and more streamlined work process is expected to be achieved along with less bureaucracy among researchers in Nigerian agricultural research system.

The application of self-management skills by researchers in their research operations according to Newlands (2015) will give room for them to pursue their passions and achieving them will lead to their high self-esteem and may this likely impact positively on scholarly publication output of researchers. According to Newlands, people who have great value associated to them have the likelihood to succeed in both their personal and professional lines because they add value and are willing to pay the price in effort, time and personal investments of accomplishments so that they can become smarter, better, more knowledgeable and stronger. The advantages for these people with high self-esteem are explained by Newlands to include personal career and financial rewards, good reputation, experts within their discipline and recognition for being reliable. Newlands (2015) added that the highest reward for people with high self-esteem is personal satisfaction in a job well done.

Newlands (2015) explained further that those employees that think negatively are likely to possess lower self-esteem because they concentrate more on their errors and their perceived weaknesses. Because of their perception, low self-esteemed employees are explained to have tendencies for poor performance at work, low scholarly publication output and resistance to change of attitudes.

Adapting to change according to Borton (2014) is one of the features associated with researchers who have self-management skills while act of delinquency and other anti-social behaviours are ascribed to researchers who lack self-management skills because most often they manifest features that can portray them as unorganised staff with little commitment to the task given to them, and as such they often achieve little. The ability to be aware of and move from accessing information in a physical library to virtual libraries where opportunity to access more quality and current information is possible for improved research work and quality scholarly publication output can only be maximised by a researcher who has self-management skills that can make him see the need for change and key into it.

The importance of self-management was explained by Ali and Baba (2015) as a component that will help a researcher to work in an ordered and methodological manner with the desire to be efficient and productive in mind. It also makes researchers to possess good

organisational skills which will make them orderly in their approach in conducting themselves. The possession of self-management skills according to Ali and Baba (2015) will assist researchers to cope with the world around them which the authors described as being essential if the researchers will achieve their desire for efficiency at work and also achieve their personal goal of smooth career progression which requires that researchers will conduct research and also produce good scholarly publication output from their research work.

Ali and Baba (2015) further explained the importance of self-management to attainment of set goals by a researcher. According to them, possession of self-management skills helps a researcher to be focused in doing the right tasks. The authors also revealed that possession of self-management skills will support researchers to set their priorities rightly and also make them to choose and follow the correct pathway to their desired destination. Ojokuku and Obasan (2011) also explained that efficiency in job performance also requires how good an employee is able to manage his time. Relating the importance of time management to an employee who is a researcher, the authors explained that a researcher who will write any good scholarly publication output must be able to manage his time very efficiently. In the opinion of Ojokuku and Obasan (2011) time management for a researcher involves some self-monitoring methods. Elaborating on this view, the authors said that a researcher must constantly monitor his commitment to the research task in which he is involved.

Some measures for monitoring commitment were explained to include how much time a researcher spent on what he has planned to achieve for a designated period of time. How much of his time did he spend on appointment or attention to friends who are not relevant to the research task being pursued? Based on the need for good time management by a researcher, Ojokuku and. Obasan (2011) suggest that researchers should make sure that they use their scheduled time for different commitment that are related to attaining success in the research so that at the end a good scholarly publication output will be produced.

Ali and Baba (2015) further revealed that application of self-management skills by a researcher is very important because such a   researcher is expected to perform tasks that involve the use of knowledge, skills and display of professionalism. Hence, the authors explained that the self-management skills will help an employee like a researcher to imbibe the attitude of making an advance plan and preparation for work each day. The authors explained that the practice of an employee preparing a work list for the next working day in

the evening or night preceding the day will make the employee to go to work the next day with his subconscious plan.

Based on the highlighted approach requesting employees to prepare their work list for the next working day at the night preceding the day, Ali and Baba (2015) explained that an employee like a researcher will wake up in the morning with ideas and insights that are relevant for executing the plans designed for the day. One of the advantages of the approach to employees like researchers as explained by these authors is that it allows for sound sleep because a major reason for insomnia is anxiety to do some things which are said to be scattered in the minds of the individual. So, the desires to think of how to achieve issues that are lingering in the minds according to Ali and Baba (2015) can make concerned employees to remain awake in the night trying to think of how to get things done. The authors explained further that once an employee like a researcher writes down everything he desires to do the next day before he sleeps it helps to clear the mind and consequently a good sleep may follow and in the next working day, the body system will be strong to work more, research and scholarly publication output related activities will be discussed and promoted diligently.

According to Histrich and Peters (2002), the successful persons go to bed at reasonable hour and rise early so that they can have enough time to think and plan for the coming day. Hence, the authors explained further that they are always more effective than those who do not sleep until the last moment. The authors added that a few minutes of purposeful quiet reflection before a task began can save many hours of executing the task. For a researcher to be successful in his career, he needs to have self-management features that will make him create the habit of going to bed to have a good rest and rise early to plan his daily activities. This condition of the mind is likely going to support a researcher to execute his research vision and develop good scholarly publication output.

Fanimo (2011) in his analysis of the role self-management plays in supporting an employee in an organisation explained that self-management arouses the creative mind of employees so that they will all the time have the desire to put in their best to get a task done. Fanimo (2011) explained further that a creative researcher succeeds better and is likely to end with a good and acceptable result because, he must have done a good planning, and must have known what he will require for the work from human resources to other resources to achieve a good result.

Leong and Rashad (2014) explained that positive reinforcement derived from self-management skills possessed by a researcher increases performance through intrinsic

motivation which according to the authors is an inward drive that can assist a researcher to surmount any problem that may not allow for successful conclusion of the research work. In his explanation, Fanimo (2011) said that there are two types of motivation. He revealed the two to be intrinsic and extrinsic motivation. The author explained that extrinsic motivation is fueled of by external factors like, threat of being fired or money as a reward but intrinsic motivation was explained to come from inside of an individual's satisfaction and enjoyment of the work among others.

As expressed by Mindtools (2014) in modern labour markets individual career success needs strategies of self-management such as career goals, goal-pursuing behavior, and design steps on how to achieve goals. It is certain therefore that self-management cannot be divorced from career success and productivity of an individual working in any result-oriented system like NARIs. Self-management skills are essential for the attainment of researchers' desire to conduct research and produce scholarly publication output from the research work. While a researcher may require resources like money and laboratory facility to put into action all the processes to set up the experiment and do the analysis to obtain result, it is certain that in-built features of the researcher which are self-management skills are equally essential to go through the processes of research and writing of scholarly publication output.

Among self-management features that a researcher may require in the process of planning and executing his research plans are commitment, relationship with other personnel in the institute, university or outside them and resources management. Some of these features are not physically present in the laboratory but they are features that need to manifest in a researcher so that he can successfully plan and execute his research plan and produce scholarly publication output from the research work.

2.7   Awareness of electronic resources and scholarly publication output among researchers in research institutes and universities

E-resources as described by Abubakar and Akor (2017) are sources of information which play crucial value in knowledge sharing and appreciation of knowledge sharing procedure that do occur in tertiary institutions and a tool that assist research scholars in their research work in research institutes. However, despite the important roles associated to e-resources which make them to gain prominence in various academic libraries, their usage is said to be based on awareness. Awareness, as explained by Obuh and Bozimo (2012) arouse eagerness to known information about new inventions and how individuals and the generality of the people can benefit from it. In the working environment of research scholars, Okiki

(2012) highlighted the importance of scholarly publication output. He stated that it gives opportunity to researchers to express their perception about a researched item which is of interest to other researchers in that area of knowledge. Okiki (2012) expressed further that through scholarly publication output that is credited to a researcher, the researcher is said to gain recognition for creative thinking through the knowledge he has discovered and he is sharing among his colleagues. Also, Obuh and Bozimo (2012), added that the system of scholarly publication has evolved overtime and with the advent of information technology the authors revealed that the processes of publishing has improved tremendously. However, Obuh and Bozimo (2012) added that even though the processes of publishing have improved, the role performed by scholarly publication still remains the medium through which scholars show their research efforts in a particular field for the attention of colleagues and another person that may be interested.

Some investigations have been done to show the impact of online databases to the scholarly publication output of research scholars which include lecturers in the universities and researchers in research institutions. De Beer (2005) and Dulle (2008) in their studies which focused on determining the characters that promote the consultation of open access as medium to propagate scholarly publication, the outcome of the investigation revealed that knowledge of researchers about publications in open access channel influenced the researchers to choose publishing in open access outlet.

Similarly, Aina (2014) in the study conducted on consciousness, receptiveness and consultation of online databases among lecturers of Babcock University Business School found out that the status of consciousness of online resources by the respondents varied. While 69.4% of the participants have knowledge of the existence of the online journals, 56.5% of the respondents indicated awareness of the JSTOR and dissertation. Thesis and Ebscohost recorded 46% and 43% level of awareness respectively. The study revealed very low awareness for Bookbrom, a World Bank information electronic resources and National Virtual Library. An observation to the outcome of the investigation on the receptiveness of the electronic resources at Babcock University showed a decline between the level of awareness and accessibility of the e-resources.

Though online information service was available in the university library and the participants for the investigation claimed that they have the knowledge of it, the finding showed that the participants for the study did not use the information resources due to the challenges which Aina (2014) highlighted to be non-functional Internet facility and

unreliable power supply. It was perceived that the benefits the respondents will derive from the online services will be much lower if their accessibility to the e-resources was hindered due to insufficient knowledge of the online database by the participants of the study. Aina (2014) also confirmed that Babcock University Library needs to increase the level of knowledge the participants have on online information services and they should be exposed to adequate training that will enhance their skills to access the database. The author recommended further that the library should make the resources accessible to users by improving on the awareness strategies and providing necessary infrastructure. These processes in the opinion of Aina (2014) will increase the impact of e-resources among academic staff and further enhance effective teaching, research development and scholarly publication output.

It was established also from findings of some related studies that knowledge of e-resources by researchers contributed to their enhancement of research and scholarly publication output. Similarly, low awareness of e-resources among them was revealed to be a contributing factor to inadequate number and deficiency in the depth of scholarly publication output. Attama (2013) associated the low level of scholarly publication output among academic staff to low awareness and non-use of library resources which include both the electronic and print resources.

Popoola and Haliso (2009) were revealed to have also discovered from their study that academic staff awareness makes them to rely on library resources like electronic library collections to influence their quality of scholarly publication output. The awareness and the consultation of online databases were equally explained by Attama (2013) to have contributed to influencing writing of articles in various journals that are published both locally and internationally. Increase in other scholarly publication output like conference proceeding, technical reports and books by academic staff were also linked to the consultation of online databases. Attama (2013) justified the consultation of online databases by the participants which led to improvement in writing of scholarly publication output by the respondents to awareness of e-resources.

Ukpebor (2011) also observed that electronic information resources are used as a source to provide accurate and timely information to researchers of different categories and institutions. The awareness of e-resources by the researchers according to Ukpebor has boosted teaching, research, and collaboration with colleagues around the world. This process was explained by Ukpebor to have improved intellectual growth which was said by the author

evident from the recorded improvement in the level of more intellectual enquiries the researchers conducted and their scholarly publication output. Ukpebor (2011) explained further that the awareness of electronic resources has begun to draw people closer globally through video and data coverage. These electronic resources were revealed to have created new innovations for digital multimedia and interactive communication technologies which were said to be contributing to worldwide connectivity, increase in knowledge sharing and growth in scholarly publication output of researchers.

Awareness of electronic information resources was recognised by Akpojotor (2016) as a contributing factor to increased intellectual information disseminated by researchers. The awareness of the Internet and the use of the facility were outstandingly recognised by Akpojotor (2016) to have modified users desire to seek to be educated on different issues and have aroused their interest to have facilities that aid access to comprehensive and concise information. He explained further that the consultation of online databases as source of having access to increased knowledge by researchers enhanced the researchers' level of research productivity which was said to have manifested in increased scholarly publication output like increased number of published books, journal articles, technical reports and collaborations in co-authoring of books among scholars. This was possible because, according to Akpojotor (2016), individual scholars have the opportunity to comprehensive, timely and reliable information from their perspective and deployment of information in digital format which is known to have contributed to scholarly publication output.

Ehikhaamenor (2003) said the opportunity which came to researchers through massive use of relevant information at their convenience was not like the situation in the past. He explained that researchers before the advent of online resources concentrated on printed publications to get their desired intellectual materials to support their research activities. At this time the author explained that the researchers had very limited access to global information, hence they were restricted to locally accessible information which Ehikhaamenor explained could have contributed to the researchers' low quality and quantity scholarly publication output.

Due to the increase in consciousness of online database information materials among academics in Nigeria academic institutions, Ani, Nuglube and Onyancha (2014) discovered through a study conducted on scholarly information published by lecturers in selected Nigerian Universities that some variations in scholarly publication output across disciplines/faculties which were earlier revealed in some studies globally did not manifest in

their study, instead the researchers observed that there was no existence of much difference in the scholarly items published by respondents across disciplines/faculties surveyed. The researchers attributed the eradication of the variation in scholarly publication output along discipline/faculties to advancement in awareness of electronic information for enhancement of research among scholars in Nigerian universities.

While explaining the reason why there was no variation in scholarly publication output along disciplines/faculties further, Ani, Ngulube and Onyancha.(2014) maintained that it seems that with equitable research facility/ resources such as awareness and access to emerging electronic information resources, the influence of discipline on scholarly publication output among researchers will be minimised. The view of Ani, Ngulube and Onyancha (2014) was expressed as follows:

> Information is critical in research: thus equitable access to information through Internet and global information resources may promote efficiency in research across disciplines. (p.89)

These authors also established from their study that the increasing trend of women empowerment in research like increased awareness of electronic information resources among women researchers like their male counterparts has made it possible to find out that there exists little departure in productivity, that is in scholarly information output between male and female respondents, who were researchers at the selected universities in Nigeria that were used for the investigation. The finding from the reported study was explained to be in contrast to the popular norm in literature which was said to have revealed men as being more productive in terms of scholarly publication output than women. The researchers therefore emphasised that with the same research conditions among which is the same opportunity of having the same level of consciousness for online information materials between the genders, the gender gap in scholarly publication output would be gender neutral in universities and research institutes.

The increased acquisition and renewed strategic awareness approach being adopted by libraries particularly in research institute and universities give hope of increased scholarly publication output among researchers in the universities and research institutes. Though, many problems have been highlighted as hindrances to the consultation   of online databases among researchers in Africa, increased knowledge of the online services among researchers through libraries which inform researchers about derivable benefits that are associated with the consultation of online information system may not discourage the researchers from

wanting to access the information tool despite the possible problem that may arise in the course of using it.

Scholarly publication output of researchers is an issue that is usually and persistently given great attention among lecturers in the universities and researchers in research institutes globally. It is like that because the quality and quantity of scholarly publication output produced by researchers and lecturers signify the essential components of the measure of their productivity in the system and consequently it constitutes part of the factors that determine their responsibilities in the system.

The importance of libraries in the universities and research institutes is to support researchers with comprehensive, relevant and timely information to conduct research and contribute scholarly publication output that will be acceptable globally. This is one of the reasons libraries are established in the academic system. Also, one of the ways the libraries can achieve this objective is to acquire relevant electronic information databases and create awareness that will attract the researchers to be aware of them so that they can develop interest to use them and derive maximum benefit associated to their use which include quality research and production of globally acceptable scholarly publication output.

2.8 Use of electronic resources and scholarly publication output among researchers in research institutes and universities

The measure of academic success in academic institutions according to Okiki (2013) is research and scholarly publication output which he said requires information resources. The research and scholarly publication output in academic system as explained by Akussah, Asante and Adu (2015) are positively influencing the continuous consultation of online databases among researchers so as to improve their published works, presentations at national and international levels and conversations regarding research. Renwick (2014) explained that online databases have increased in acceptance and consultation. The author highlighted further that electronic resources allowed innovation in teaching and research among scholars. It was said also that e-resources increased timeliness in research and has also led to the growth of scientific inventions and establishment of unfamiliar environment for intellectual investigations of knowledge.

Thanuskodi (2013) expressed his view along that of Renwick (2014). He described online databases as the process of packaging large volume of information through electronic devices and the packaged information are consulted as electronic aided books, information that is digitalised, accessible online information of articles in journals, knowledge sharing

through online system and conduct of examination through online devices. The author revealed further that due to compatibility of online databases with multi-media, the information materials, that is the e-resources are presently an appreciated avenue for scholars to access large volumes of information for their research activities. In his explanation of the relevance of e-resources, Thanuskodi (2013) explained that e-resources are highly noticeable in the area of enhanced approach to information packaging, accessibility and knowledge sharing to boost impartation of knowledge and opening new opportunities, investigations and intellectual enquiries by scholars in universities and research establishments.

Madhusudhan (2010) also conducted a survey on the mode of consultation of online databases among lecturers, school children and scientists in higher and research institutions. The findings from the study revealed that 78% of the participants in the study are of the opinion that the consultations they made to the internet and online journals added a lot of value intellectual investigation they were involved in.

Okiki (2013) studied the availability of information resources for research output among academic staff in Universities owned by the Federal government of Nigeria. His findings showed that in all the universities used for the study, the status of availability and consultation of the online databases was high. In particular, the study established that there was influence of the presence and accessibility of online databases on intellectual investigation conducted and scholarly publication output of the scholars. More importantly, the study confirmed that there was positive and significant influence of books, journals, the Internet, references, search engines, websites, online public access catalogue, photocopy and newspapers/magazines on academic knowledge investigation and scholarly publication output of researchers in Universities in Nigeria.

On the other side, the findings from the study conducted by Okiki showed that the influence of e-books on academic research productivity is negative, while CD-ROM and electronic databases have positive influence on research and scholarly publication output of the researchers but not significant. In furtherance of the findings from the highlighted studies, Okiki (2012) noted that an impressive number of different categories of researchers have commenced consulting online databases.

He also revealed from the studies that e-resources have impacted highly on the research scholarly publication output of users so much that libraries have decreased their subscriptions to print information resources and they are now investing more on online information system. The outcome of Madhausudhan (2010) on the research scholars of Kuru

Kshetra University further buttressed the findings from earlier studies reported. Madhausudhan reported from his investigation that online databases had turned out to be an irremovable portion of the knowledge requirement of lecturers in the university. The author also discovered that online services can be an acceptable alternative for typical information materials because the entrance is said to be quick due to the provision of many computer terminals available to enter online databases by users simultaneously.

Shailendra and Mansha (2011) also confirmed from their study that scholars at National Physical Laboratory in India who were said to consult constantly electronic scholarly periodicals for their research work indicated that with the use of e-journals the standard of their intellectual investigation were enriched in content and material and it supported them to publish very good manuscripts and scholarly publication output.

Furthermore, the study conducted by Bhukuvhani, Chiparausha and Zuvalinyenga (2011) on the effect of online databases skill acquisition for scholars on teaching activities and knowledge enhancement mission shows that the consultation of online databases by the scholars encouragingly affects the lecturers work by 87.9%. This was supported by students' evaluation of lecturers and the result of the evaluation conducted by students on lecturers showed that lecturer's references were from current sources and lecturers engaged in researches that were meant to solve a particular problem during their class teaching. This in turn was revealed to improve the standard of students' work and also help the students to embrace the culture of conducting research.

Beyond this, the researchers reported also that when the need arises, the lecturers make references to their publications for the students to access online and this initiative added value to online information system and made the students to develop more interest to consult it, in the same vein it boosted the desire of the lecturers to want to publish more so that their students can appreciate them more. In the same study, the lecturers' research and scholarly publication output was shown to have increased both in quality and quantity due to committed consultation of online information resources. The result from the sample indicates that up to year 2010, 30 research articles, that is one article per lecturer were said to have been published in referred journal. By the end of May 2011, when data gathering for the study was indicated to have ended, four articles were said to have been published and research papers accepted for publication were in press in the referred journals.

The presence of online information services in libraries and their frequent consultation among scholars are increasing rapidly. According to findings of studies conducted on

consultation procedure of online information system by researchers, it was observable that researchers are increasingly appreciating the derivable benefit associated with electronic resources. For instance, Asari (2010) in his enquiry on the level of consultation of online information system by the scholars at the University of Karachi, the result of the enquiry indicated that 100% of the respondents for the study admitted that online information system are superior replacement for print information materials if the processing of accessing the online information is at a very high speed. The volumes of scholarly materials accessible by researchers from online information system were said to be of great value because according to the view expressed by the respondents, they keep them abreast of the latest information and they also help them to improve their academic and professional competency.

Okello-Obiora and Magara (2008) equally conducted a study on the level of consultation of online information system at the East African School of Library and Information Science, Makerere University, Uganda. The findings showed that 76% of the participants explained that they benefited immensely from the consultation of online databases for their academic schedule. The participants for the study confirmed that through frequent consultation they made to online databases, they were able to enter into many databases and get wider range of scholarly materials and according to the result of the study; the use of the online information system enhanced their learning activities due to the frequent consultation they made to online databases which gave them the opportunity to have wider knowledge.

Adepetun (2015) in his writing on Nigeria's ICT contribution to GDP explained that the use of ICT in Nigeria has contributed to 11% of Nigeria's GDP. Adepetun (2015) revealed further that the Internet users in Nigeria have risen to 93.5million. According to News Agency of Nigeria (NAN), the number of phone subscribers who accessed the Internet in June 2015 was 92,816,572, but it increased in July to 93,551,811. The data also showed that out of the 93,551,811 Internet users in the month of July, 2015, about 93,403,147 were on global system for mobile communication (GSM) while 148, 664 were on the code division multiple access (CDMA) networks. The consultation of online information services in all subjects' and walks of life is increasing agitation from scholars in institutions for wider provision of the Internet services in institutions of learning.

To maximise the opportunities that are increasingly made available to scholars through electronic resources, Swan (2010) recommended that libraries should develop a sustainable training programme for their users which will make them to acquire skills that are

necessary to access information easily. The authors also suggested that the training should be in small groups, practical in nature and at regular intervals. Through this approach, according to Swan (2010) scholar's access to information will be easier and the impact of electronic resources among the academics will be increased and consequently as expressed by the authors, knowledge will increase through research findings and quality scholarly publication output of researchers will increase and be acceptable by reputable publishers.

Swan (2010) also in his study, documented some hindrances to the consultation of online databases among researchers. Among the highlighted hindrances is lack of formal training for research scholars on how they will navigate the online services to get their desired information. Also, the slowness in downloading PDF files and the interruption of electricity while searching for information were expressed as part of the major problems that may continue to discourage library patrons whenever they are consulting the online databases.

In spite of the problems highlighted as hindrances to easy consultation of online information services by researchers, the need for easy accessibility of quality information by researchers is still recognised as an important requirement for a good research work and the development of quality scholarly publication output among scholars in universities and other research inclined establishments. This view was further confirmed by Omeluzor, Madukoma, Bamidele and Ogbuiyi (2012) through a study they conducted to find out the level of consultation of online databases and scholarly publication output among lecturers in private universities in Ogun state, Nigeria. The findings established that many of the lecturers from the institutions of learning used for the study have knowledge of online databases and they also responded that they frequently consult the online services whenever they engage in activities that are related to the conduct of intellectual investigations. They published the processes and outcome of the investigations in their professional journals and also presented them at conferences.

Okon, Patrick and Bosire (2014) conducted a study on the outcome of admittance and consultation of online databases on scholarly publication output of lecturers in selected Nigerian Universities. In their findings, they reported that there was a remarkable and a good relationship between admittance and consultation of online information and scholarly publication output of the lecturers at the selected institutions. From the summary of the outcome of the study given by the authors, it implies that when researchers have easy entrance to the consultation of online services and they consult the online information

services frequently the chances are high that the online information services will contribute to the productivity of the researchers in the selected universities.

The reports on the outcome of the investigation done by Okon, Patrick and Bosire (2014) showed that researchers in Africa will publish quality scholarly publications that will be acceptable in internationally rated journals, if they have access to and they consult frequently online databases like their counterparts in other part of the world.Blanca (2013) studied the effect of the use of online databases on scholarly publication output of some lecturers at the University of Castile and Leon. The findings from the study showed that academics from the areas of science and technology make use of online databases in the university library more than any other faculty in the university. The researchers from the field of chemistry were revealed to have registered the highest rates of the consultation of online information system and academic publications. Scholarly publication on food science and technology followed and physics followed in scholarly publication output produced by researchers.

Ume and Salam (2012) studied the level of consultation of online information services and its effect among library patrons at Dhaka University. The participants in the research work were academics, students, and researchers. The purposes for which the respondents used the electronics were teaching, learning and research. The online databases they consulted in the university library were in this order: the use of the Internet ranked first, was electronic journals, e-books, catalogues and lastly bibliographic database. Almost all the library patrons expressed that they accessed the online databases they wanted to use easily because according to the respondents, the Internet bandwidth was adequate and this made navigating through the internet convenient. The finding from the investigation showed that over half of the participants for the investigation were satisfied with the e-resources they used.

Though, the participants expressed that they faced some difficulties when they were consulting the online databases, among the problems identified were; limited number of title existed in the available electronic databases, the respondents said the databases did not give them access to enough back issues, lack of assistance from library staff and inability to gain entrance to the online databases from their various residents. Apart from the expression of satisfaction by respondents about the e-resources used, they also confirmed that the consultation of the online databases contributed to their success in conducting intellectual enquiries and other scholarly activities.

Obasuyi and Okwilagwe (2016) conducted a study on issues that emanated from the research institutes which promote the frequent consultation of research 4life databases by National agricultural research institutes scientists in Nigeria. The study consists of 1,205 respondents from the 15 NARIs. The institutional factors for the use of research 4life databases discovered from the study showed that six issues that have their origin from the research institutes which influenced the consultation of online databases were discovered from the result of the investigation. Some of the institutional factors found significant were, easy entrant to the online databases, possession of password by the potential users and an internet service that can be navigated at a very fast speed.

The impact of consultation of online databases in academic and research institutions in Tanzania was the focus of the investigation conducted by Wema and Manda (2013). The study laid emphasis on evaluating the effect of training conducted on impact of e-resources training on access and awareness within academic and research institutions in Tanzania. It was revealed that researchers who were the target population indicated that they used the e-resources for teaching and literature sources for research purposes. The respondents for the study also confirmed that they found the e-resources useful and they added that they enhanced their knowledge and contributed to their academic development. However, some challenges were highlighted as hindrances to maximum usage of the e-resources. They are: low bandwidth, slow loading and downloading, frequent and unexpected power cut.

Quadri, Adetimirin and Idowu (2014) investigated the availability and use of library electronic resources by undergraduate students in private universities in Ogun State, Nigeria. It was discovered from the study that most of the respondents used the e-resources for assignments and research. The Internet and journal in electronic format were the highly deployed information tools by the researchers. The study also revealed that the use of the e-resources contributed meaningfully to the academic work of the students.

Vasappa and Shvalingaiah (2009) conducted a study on the attitude of research scholars towards the usage of electronic information resources at University libraries in Karnataka and found out that the majority of the respondents expressed that the use of print resources for research decreased due to easy access to electronic resources. More than half of the respondents agreed that ICT and e-resources greatly supported the quality of research in their field.

From the findings of the various literature reviewed for this part of the research work, it can be observed that the processes of conducting research, teaching and learning in

universities and research institutes are influenced by the use of e-resources the researchers have access to in their various academic institutions. Most of the studies showed that scholars are using e-resources more than print information resources in the libraries. Similarly, it was also revealed that the derivable advantages in the use of e-resources like easy access to large quality information, accessing information at different points apart from going to the library, downloading and printing of information for use; all facilitated the use of e-resources by researchers. In addition, many of the users of the e-resources confirmed that the use of e-resources increased their scholarly publication output. To some, the increase was in the number of scholarly publication output while to others it was in the quality of teaching and learning.

It could be said that the use of e-resources gave the users some satisfaction despite the problems they encountered while using the electronic information tool. In view of the derivable benefits of e-resources to research, teaching and learning, it is an important information tool that all libraries should subscribe to so as to facilitate and improve the quality of research and scholarly publication output of researchers in agricultural research institutes and universities in Nigeria.

Apart from the installation of the Internet facilities in all the agricultural research institutes and universities, the e-resources the libraries in the institutions should subscribe to should meet the information needs of the researchers. The Internet facility should have high bandwidth to support fast retrieval of information and adequate financial support should be given to pay subscription fee at the appropriate time. Electricity supply should be reliable and awareness support should be adequate.

The use of e-resources among researchers in agricultural research institutes and universities will improve the quality of information gathering and its use. It will also facilitate collaborations and improvement in research. Invention of more technologies to solve agricultural problems will emerge through scientific research from researchers in NARIs and universities. Also, quality scholarly publication output that will have global acceptance will be produced.

2.9   Awareness and use of e-resources among researchers in research institutes and universities

The relevance and significance of information in digital format to impacting knowledge and investigation of knowledge is known by many knowledge investigators (Ashikuzzam, 2016). According to Dadzie (2005), electronic resources are valuable resources that complement print based resources. They have also been acknowledged by different categories of users as being very helpful especially to postgraduate students, lecturers in the universities and other tertiary institutions and researchers in research institutes.

E-resources as explained by Thanuskodi (2012) are resources that include documents in electronic or e-format and the documents can be accessed essentially via the Internet. Thanuskodi (2012) revealed further that digitalized databases are available in different formats and he listed the following as part of them; e-book, digital libraries, online journals, magazines, e-learning tutors, on-line test, e-journals, e-discussion, e-news, data archives, e-mail, online dictionary of information science and the Internet.

Further, on the meaning and importance of e-resources, Ansari (2010) explained that electronic information resources are materials consisting of data and or computer program(s) encoded for reading and manipulations by a computer through the use of a peripheral device directly connected to the computer such as a CD-ROM drive or remotely via network through the Internet. He also explained that the different categories of e-resources that are available and they include; software application, electronic text, bibliographic database, institutional repositories, web-site, e-books, and collections of journals etc. Dhanavandan, Mohammed and Nagarajan (2012) added that there are several forms and types of electronic resources that are available on the Internet. These authors highlighted the following among the popular ones that are gaining grounds. They are the electronic journals, standards, technical specifications reports, patent, full text articles, trade reports and a host of others.

E-resources according to Manjo, Gauri and Bimal (2011) are technologies facilitated to provide quick, correct and comprehensive scholarly information for fulfilling day to day academic and research requirements of the teachers and researchers in different field of study. To effectively utilise these resources by lecturers, researchers and students, these authors indicated that an intensive and consistent awareness is required. Also explained to be important to utilisation of e-resources are equipment like computers and infrastructures that will promote their usage by the target users.

It is noticeable from the outcome of some studies relating to the use of e- resources that most e-resources were appreciated highly by students, lecturers and researches. Based on their appreciation, librarians particularly those in academic and research libraries are subscribing to different types of electronic resources based on their needs. The acceptability of e-resources by different groups of scholars is further explained by Egberongbe (2011) to be as a result of the potential of digital formats to support retrieval and dissemination of information which are reported to be of essential to any research and library in tertiary institutions.

Paulina, Osman and Paulina (2014) said that though academic and research libraries may have increased desire to subscribe to electronic resources to adequately meet the information needs of their users; however, findings from many of the studies conducted across libraries show that the presence of information in digital formats does not automatically encourage utilisation. Dadzie (2005), in his study, where he examined access and usage of electronic resources at Ashesi University College, found that users had high computer skills and good infrastructural facility to facilitate usage of e-resources by scholars but it was discovered that the usage of the information in digital formats was quite little. This is due to low knowledge of the availability of information in digital formats.

Similarly, Basorun, Isah and Adisa (2011) also revealed from the finding of their study on the use of e-resources among lecturers of the University of Ilorin, Nigeria that frequency of use of electronic resources by academic staff of the University was low. Many reasons were associated to the low usage. Among them was lack of awareness of digitalized databases provided by the library.

It is obvious that the introduction of e-resources to libraries has dramatically altered how information is accessed, stored and disseminated; therefore awareness is paramount to the use of the new technology. Though, few cases of users being aware but refusing to use the technology may still be available, the view expressed in *Business Dictionary (2010)* further confirms that in marketing, awareness is key to bringing a new product into the minds of the target user of the product. The awareness of the product may stimulate the target users of the product to either like the product and use it or dislike the product and refuse to use it .Revealing further, the *Business Dictionary* highlighted some factors that promote awareness of brands of a new product. Some of the factors mentioned include availability of the product, accessibility of the product by target users, bringing to the knowledge of the target users through advertisement and how the product can impact the target users positively.

Prangya and Rabindra (2013) view on awareness of e-resources further strengthened the importance of the highlighted factors that promote awareness of a product. According to the authors, recognition is important to the use of information in digital formats. They also opined that where information materials are in close access, researchers will find them and make do with them for whatever reasons they needed them for. Despite the low awareness of e-resources among scholars, Prangya and Rabindra (2013) reported that deployment of information in digital formats among researchers at different levels has brought good outcomes in the areas of sharing knowledge and analysis of knowledge. These authors reported further that with the help of deploying of information in digital forms, investigators in research organisations, lecturers in universities and other academic inclined institutions and students in various tertiary institutions now have access to global information resources particularly the Internet for their scholarly intercourse.

The view expressed on the use of the Internet is further buttressed by the success story of its usage across the world as written by Ubabukoh (2016). According to the information given by the author, there are 63 million Internet users in Nigeria and the country is ranked number one in Africa and eight in the world in terms of Internet usage. The report revealed further that China topped the list of 15 high Internet user countries with 632 million users. United State of America followed with 269 million users, India 198 million, Japan 110 million, Brazil 105 million, Russia 87 million, Indonesia 83 million and Germany 68 million.

Others according to Ubabukoh (2016) are Nigeria with 63 million, The United Kingdom 57 million, France 54 million, Mexico 52 million, Iran 49 million, Egypt 43million and South Korea 42 million. The report which was extracted from the latest edition of Digitalfacts shows that since 2011, Nigeria had maintained a steady upward trend in the number of her Internet users. It was reported that the figure started from 35.7 million and it increased to 42.8 million; 51.8 million; 57.7 million and 63.2 million in 2012, 2013, 2014 and 2015 respectively.

The information from Digital facts, as reported by Ubabukoh puts total Internet users worldwide at 3.2 billion as of December 2015. This was revealed to be an increase of 8.9 % over 2.9 billion Internet users recorded at the end of 2014. The report also revealed a regional statistics which shows that Asia- Pacific had 1.6 billion Internet users as of December 2015 while North America, Latin America, Western Europe, Central/Eastern Europe and Middle East/Africa were reported to have 288 million, 325 million 310 million, 238 million and 429 million in that order. The report also made public that the Nigerian telecoms sector, which is

regarded as one of the largest in Africa was driven almost completely by mobile telephony. Based on the increased trend of usage of mobile telephone which can be observed among Nigerian students, lecturers and among other categories of elites in the Nigerian society, it is expected that students, lecturers and researchers in different research organisations may likely have contributed largely to the increase in the number of the Internet users reported in Nigeria, Africa and other countries of the world.

Ray and Day (1998) also acknowledged that a number of relevant studies have been carried out on the use of electronic resources by lecturers, research scholars and students worldwide. The authors expressed further that the general user's opinion towards the use of electronic resources, like CD-ROM has been positive. Madhusudhan (2010) carried out a study on the use of electronic resources by different users including research scholars from research organisations; he reported that seventy eight percent (78%) UGC-Internet-e-journals have created high dependency value on their research work.

In Nigeria, Oduwole and Akpati (2003) investigated the accessibility and retrieval for the use of electronic information at the University of Agricultural Library, Abeokuta. According to their findings, the use of electronic resources cut across all members of the university community and they were satisfied with their search outputs. Madhusdhan (2010) conducted a study to find out how electronic resources were utilised by researchers of Kurukshetra University in India. From his findings he reported that electronic resources have become an integral part of the information needs of research scholars of the university. Moreover, he also discovered that e-resources have become a good substitute for conventional resources and google was reported as the most widely used search engine by researchers.

The study conducted by Chandra, Sankaranara, Nagaranjan and Mani (2014) using researchers at Arts and Science Colleges at Chennai revealed that most of the respondents indicated that they were aware of the presence of e-resources at their college library and the awareness   based on the findings from the study contributed to the visit of the respondents who are researchers to the college library to access the electronic resources for their teaching and research purposes. The result of the study also confirmed that majority of the respondents said the e-resources were useful to them.

Okorie and Agboola (2012) also researched into finding out the availability and use of electronic resources in Agricultural University libraries. The findings from the study showed that the knowledge the researchers who are respondents for the study had about the

availability of e-resources in their university libraries enhanced the use of the electronic information resources that were available in the university libraries and the respondents acknowledged that the information resources supported their quality of output in their research and teaching activities.

In the same vein, Thanuskodi (2012) findings from the research he conducted about deployment of information in digital formats by research scholars and postgraduate students in Annamalai University revealed that the majority of the respondents were aware of the availability of the electronic resources. The awareness according to the study contributed to the use of the resources as the study revealed that 76.66% of the respondents use the e-resources for research work in their institution.

The need for strategic and professional approach to the creation of awareness about Electronic information resources among library users was further discussed by Michelle, Gerhard and Franziska (2015) in an article titled "E-Day" in Bern. These authors noted that if libraries refused to advertise the services they render through marketing approach, they will miss both existing and potential users of library information resources which libraries have acquired like electronic resources that are not physically visible. Because of non -use of professional approach to create awareness, the information tool will remain inaccessible to researchers who are expected to benefit from the electronic resources.

The view expressed on the importance of creating awareness to enhance the use of e-resources by researchers further manifested in a study conducted by Madukoma, Onuoha and Ikenne (2014). The researchers investigated the electronic information resources use and behaviour of members of the faculty of law of Babcock University in Ogun state, Nigeria. The finding showed that faculty members did not use the available electronic resources in their library and the reasons for nonuse was attributed to some constraints including lack of awareness of the electronic resources by members of the law faculty was one of them.

It can be observed from the studies reviewed that awareness is very important for enhancement of e-resources used by researchers either in the universities or research institutes. Though there were other factors from the literature that promoted the use of e-resources by researchers like relevance of the available information to the need of researchers and possession of relevant skills to explore the databases,   it could be noted from the various studies reviewed that the role of awareness was more prominent in facilitating the use of e-resources by researchers. This is because having good knowledge of the information tool and appreciating its importance by researchers is the first hurdle. The interest developed by the

researcher about the information tool will facilitate the processes of solving other factors that are needed to be cared for by the researchers.

The attainment of high use of the e-resources by researchers to justify the huge expenditure for the acquisition of the information resources demands that library management of the institutes and universities should develop different marketing strategies that will stimulate researchers to be aware of the availability of the e-resources and also create interest in the use of it. The atmosphere must also be consistently conducive for the use of the e-resources. Hence, the Internet bandwidth must be adequate to facilitate high speed network and e-resources database available in the institutions' libraries must be relevant to the information needs of the researchers. The process of creating awareness and stimulating the interest of researches must be consistent and dynamic. The innovation put into various awareness programmes embark upon by the library may contribute speedily to the use of e-resources among researchers in research institutes and universities across the world.

2.10   Self-management and awareness of electronic resources among researchers in research institutes and universities.

Self-management is an art that can be acquired by an individual. The acquisition of self-management skills are very important to   individuals who desire to effectively manage themselves so that they can achieve great things in life. The Foundation Education (2016) explained that success in any good task either with a short or long-term goal starts with self-management. The foundation further revealed that true productivity, success and happiness of an individual either in a personal enterprise or as an employee in an organisation are attributable to self-management skills possessed by the person. Based on the importance of self-management therefore everyone that has the aspiration for success in a task must develop the art of self-management. This is very crucial because according to The Foundation Education (2016) an individual in a position of responsibility must manage himself before he can manage others.

The component of self-management as explained by Foundation Education (2016) can be divided into 5 items. The items include being positive about a task, self-consciousness, managing stress adequately, accepting responsibility willingly and determination to be productive .The foundation explained the concept of positivity as something that must come from the inside of an individual before it manifests outside and to achieve a positive mind, setting of short and long term goals were emphasised as essential requirements and to achieve

the goals self-motivation and self-reinforcement were revealed as factors that are needed. The foundation revealed further that if an individual with set goals does not allow negativity to build up in his mind, such a person will continue to see a gradual positive effect of his self-management skills in the set goals. The Foundation Education (2016) explained further that genuine positivity is infectious, hence self-management experts at Foundation Education encouraged that individuals with a set goal either as an entrepreneur or as an employee should build a positive environment around himself both at work and at home.

The Foundation Education (2016) and Youth Employment UK (2019) discussed the second concept of self-management which is self-consciousness. The two bodies described this concept of self-management as a valuable skill which, few people truly master. Self-consciousness according to the authors requires that people should be able to understand the reasons for their particular behaviour. An individual according to the principle of self-management should know why he behaves in a particular way. Also, under the concept of self-consciousness an individual is expected to assess himself objectively and be

On stress management the concept was explained by the authorities at the Foundation Education (2016) and Youth Employment UK (2019) as a way of life that has ruined lives. Stress according to the authors occur among people who make mountains out of molehills and those who believe that they cannot get a solution to a particular task or a project they are involved. The authors revealed further that the ability by individuals to implement effective stress techniques will equally allow such individual to be efficient in managing issues of life as they manifest in the cause of performing a task or project. The processes of managing stress effectively so that it will not negatively affect the goal set by an individual or the team was explained by Foundation Education (2016) and Youth Employment UK (2019) to include delay of initial reaction particularly when one is angry. Thereafter, the authors suggested further that the person can later think about an effective way to deal with the situation. In the process of the delay of action, Youth Employment UK (2019) advised that the person should take time to breathe, think and relax until he is in a better state of mind to make the right choice among available options that supports progressive action.

Taking responsibility for one's action is another component of self-management described by Foundation Education and Youth Employment UK. According to these establishments, the best way higher productivity can be enhanced is when individuals manage their time. The authors explained some of the steps to consider when planning the time available for a task. The bodies of knowledge explained that individuals should bear in mind

that it is not possible for people to operate at 100% capacity all the time. Hence when there is a task to be performed provisions should be made from the available time for the task for break, which must be enjoyed and some period for relaxation and unwinding, depending on the volume of the task and available time for the project.

Based on the principles of self-management as revealed by different organisations and authors it can be deduced that it is an art that can be acquired through learning and its acquisition can be employed for effective management of one's life so as to enhance one's productivity and that of an organisation where one works, hence it is a good behavioural trait for researchers to guide themselves to do all the needful like having awareness of and frequently using e-resources to get quality information to enhance their conduct of research and development of scholarly publication output.

Awareness, which is having knowledge or getting familiar with something, is a process that is prominently put to use usually by marketers whenever there is a new product which targeted audience need to be familiar with. The process of creating awareness is usually associated with the way the targeted audience can be reached. The essence of creating awareness is to get the target audience familiar with the product so that they can use it.

The electronic information resources demand the use of computer to get the information. Ashikuzzaman (2016) said some of them include e-journals, bibliography, e-books, online databases, websites, CD-ROM, diskettes and other portable computer database. The electronic information resources are increasingly becoming popular in libraries because of its advantages which, according to Ashikuzzaman (2016), included the high speed at which information can be accessed. Apart from the high speed of accessing information from e-resources, it can also allow for multiple point access and this gives opportunity for large number of users to access information at the same time and at different points.

In the view of Ashikuzzaman (2016) the process of accessing information from electronic information has also contributed to the advantage it gives to users because it was revealed as information material that saves time, money and physical space. Also, electronic information resources according to Ashikuzzaman (2016) are convenient to use because information can be accessed at anytime and from anywhere, as long as the equipment and infrastructure to facilitate the working of e-resources are available. The added advantage mentioned by the author was that e-resources give users the opportunity to have access to more range of information and also in large volume. In view of the advantages, e-resources is

regarded as being research friendly and researchers are expected to get familiar with it and in this regard, studies have been conducted to determine the level of awareness of e-resources among scholars in research institutes and universities.

Okore, Anachobi and Haliru.(2015) conducted a study to find out the level of awareness of open electronic resources among scientists in agricultural research institutes in Edo state. The findings from the investigation indicated that the respondents have knowledge of Online Access to Research in Environment (OARE), Google, institution websites, TEEAL, HINARI, e-books, e-journals, e-bulletins and AGORA.

To determine the level of awareness and use of e-resources among public extension personnel in Anambra state, Nigeria, Nwabugwu, Nwodo and Okoro (2019) conducted a study using public extension personnel in Anambra state, Nigeria as respondents. The findings showed that the respondents were aware of facebook, e-mail and twitter. Some of the respondents were also aware of e-journals. However, the study concluded that there is low awareness and use of e-resources among the respondents.

Ofulugbu (2017) also conducted a study on awareness of online information sources among University of Ibadan students. The findings revealed that some respondents have no knowledge of some of the information in digital formats that were available in the university. Precisely, 41% of the respondents were not aware of JSTOR. Similarly, 82% of the respondents were not aware of HINARI and 54% were not aware of AGORA. In case of OARESCIENCES the level of awareness was better among the respondents as the finding indicates that 49.5% of them were aware of the information resources, SCIENCE DIRECT has no awareness among the respondents as 29.5% of them said they are familiar with it. EMERALD SIGHT has low awareness among the respondents because 81.9% of the respondents indicated they were not aware of it. Also 74.2% were not aware of TEEAL.

From the various studies on awareness of e-resources among scholars in research institutes and universities, it can be observed that the level of awareness is not too high. This may contribute to low use of electronic resources in various institutions and consequently the positive impact e-resources use is expected to make on conduct of research, and scholarly publication output may not be achieved.

In view of good quality attributes associated with e-resources as an information tool as explained by Ashikuzzaman (2016), it is good that researchers should be aware of it and use it. To be familiar with e-resources also demand some responsibilities from the researchers and in situations of this nature the level of the researcher's self-management skills is expected

to manifest. This is because the researcher is expected to create time for it, build up initiative that make them get familiar with it, learn and acquire necessary skills to be interested in knowing about how it operates, motivating themselves to surmount all hurdles that may hinder their interest to be knowledgeable of the digitalized databases and using it. All these features that are necessary to be acquired by a researcher before he can successfully get familiar with e-resources are features that are embedded in self-management which researchers are expected to have to enhance a successful career as a researcher. Awareness of e-resources is important for the use of the information tool, but the process of being aware require the interest, motivation and reinforcement from the researchers and these can only be provided through self-management skills. It can then be concluded that self-management skills may have positive roles to play in the life of a researcher before the researcher can take good advantage of all required resources, including information resources to enhance his conduct of research and development of scholarly publication output.

2.11 Self-management and use of electronic resources among researchers in research institutes and universities.

An organisation called Youth Employment UK (2019) gave an insight to what self-management is, its importance and how it works to promote and build an individual and organisations to achieve desired success using processes that are healthy and not injurious to the society. According to this organisation, self-management principles required that an individual will take responsibilities for his own actions. It was equally explained to involve an individual doing things that are identified as being important to personal development or organisation with much vigor, high commitment and maximum intellectual input to achieve the best result that will lead to the growth of such an individual or the organisation where the employee is working. The implication of the demand of self-management is that the individual with self-management skills for every project he engages himself either personal or as an employee, is ready to take responsibility of his own action, he offers sincere ideas to the success of the project and organises himself adequately to put in the best of his ability into the project.

Based on the explanation given on what self-management skills demands, the Youth Employment UK (2019) explained that the fulfilment of the demand of self-management skills relies on three keys which must be possessed by an individual who is working for his personal project or an employee working for an organisation. The keys are initiative, self-

organisation and accountability. Elaborating further on the three keys the Youth Employment UK (2019) explained that the possessor of the self-management skills will be interested in applying his initiative while doing the work assigned to him. The ways initiative was expected to be applied as explained by the body of knowledge include employee doing his work diligently without always being told what to do, he must be able to think on his own, generate good ideas and apply them. It also requires that the employee must be able to motivate himself to cross all hurdles on his way to getting the project done.

Self-organisation which is another concept highlighted by Youth Employment UK was explained to mean that the employee must be able to plan his time and the things he needs to do. He is expected to be able to prioritise correctly, so that things should be done orderly and according to their importance to the project. Self-organisation was equally explained to involve an employee getting things needed for a project ready, so that when they are required, the items can be accessed easily to avoid any delay. The right thing to be done therefore according to Youth Employment UK (2019) is that if an employee is working on a project and knows he will need certain tools or information to get a task done very well, he has to make sure he gets them ready before he starts the project, to avoid failure or delay in completion of the task.

Youth Employment UK (2019), explained accountability to mean taking responsibility for all actions and by this it means an employee must be ready to take responsibility for his failure in a task rather than looking for someone else to blame. In his planning and implementation, the researcher must meet deadlines, must not forget to turn up or get late to important meetings. The researcher is expected to arrive at work promptly every day and remembering to do all the needful to achieve a successful completion of the task. This includes searching and accessing relevant information from different electronic information resources.

Electronic information resources are information resources that can be accessed by computer. These resources according to Ashikuzzaman (2016), are quite acceptable among researchers of different categories because of their usability, affordability and accessibility. Apart from these features, the author explained further that electronic information resources have the following advantages: multi-access, speed, functionality, wide content, mobility, convenience and saving time and money. Based on the advantages of e-resources, its use is said to be on the increase among different groups of researchers.

While expatiating on the advantages of electronic information resources Ashikuzzaman (2016) explained that electronic information resources was described as being a multi-access information tool because it can provide multiple points of access round the clock and it allows for multiple use simultaneously. Speed which is one of the identified advantages of e-resources is achievable because an electronic information resources user can browse or search to extract information from an electronic database and also cross-search or make reference among different publications. The functionality attribute given to e-resources according to Ashikuzzaman (2016) is because e-resources allow the user to analyse its content in many ways by using the search mode. The contents of e-resources were explained as being an advantage because it can contain large amount of information but more importantly according to the author the contents of e-resources consist of mixed media like images, video and audio animation.

The use of e-resource requires some skills. According to Iyana (2016), to fully use and derive maximum benefit from electronic information resources there is a need for the user to be computer literate. The need for computer literacy is necessary for the user because according to Iyana (2016) the need to search in the electronic environment requires knowledge of the functionality of the database which can be comprehended only by being computer literate. Also the user is expected to input into the computer before desired information can be accessed. Hence, the processes of input of information also require that the user must be computer literate.

In the view expressed by Alade and Fagboola (2017) the use of library resources which include print and electronic resources contribute immensely to the scholarly publication output of agricultural research scientists and also play significant roles in supporting agricultural development. In a study conducted by Alade and Fagbola (2017), which was designed to assess the use of library resources on research activities of scientists in three agricultural research institutes in Ibadan, Nigeria, it was revealed that respondents use printed information resources like textbooks, journals and relevant grey materials that were available in the libraries of the institutes studied. However, the respondents were not satisfied with the print information resources alone, they desire that the libraries should have electronic information resources like e-journals, e-books, electronic databases, CD-ROM databases, the Internet and search engines. The respondents expressed their confidence in e-resources as information tool that can further enhance their conduct of research and scholarly publication output.

Kalbande, Syed and Shashank (2012) conducted a study on the use of consortium for e-resources in agriculture among agricultural research institute in India. Postgraduate students and research scholars were deployed as the sample of the research investigation. The research findings showed that the frequency of all postgraduate students and research scholars using internet-based information resources, online journals, CD-ROM databases, electronic thesis databases and e-books were 72.16 per cent, 61.17 per cent, 56.01 per cent and 30.58 per cent respectively. The preferred location to access the e-resources was the university library and the main purpose of using the e-resources was to download or search full text research journal articles and sending of request of articles through the e-mail.

Electronic information resources are information tool that have been acknowledged by Alade and Fagbola (2017), Ashikuzzaman (2012) and Iyana (2016) as a tool that enhances scholarly publication output, the information tool has many features that make it attractive for use by researchers. Such features include its mobility, ability to function as a multi-access information tool, the content contain vast information which give opportunity for a researcher to make good decisions.

For a researcher to use electronic resources and derive maximum benefit from it, he needs to put into practice the three keys of self-management, which according to Youth Employment U.K (2019) include initiative of the researcher which will make a researcher think of the type of scholarly information he needs, where he could find them, the skills and equipment he needs to access desired information. The quality of initiative in the researcher will drive him to access information and organize the information in a manner that he can easily access them and make reference to them to solve problems. The quality of initiative in the researcher also contributes to how the researcher is able to motivate himself and reinforce himself to get the task done properly.

It is obvious that e-resources is a reliable source of information for research scholars to access information for their research work, but the use of the e-resources by a researcher to benefit maximally from it require that the researcher will put in some efforts. The efforts expected to be put into it include allocation of time, acquisition of necessary skills to search, save, print and transfer information. For a researcher to take the pain to acquire the skills and purchase necessary equipment requires putting into manifestation the self-management keys such as initiative, self-organisation and accountability.

2.12   Theoretical framework

This study is focused on self-management, awareness and use of e-resources as predictors of scholarly publication output among researchers in National agricultural research institutes in Nigeria. The theories identified to be relevant to the study are differently unique, and each one of them illuminates the interaction that exists among the variables that featured in the study. The theories identified for the study are Social Cognitive Theory, Achievement Motivation Theory, and Campbell Model of Job Performance Theory.

2.12.1 Social Cognitive Theory

Historically, Social Cognitive Theory came up in the early 1960 when many learning and instructional theories were being developed. At this time, Bandura who is the author of Social Cognitive Theory together with his co-researchers recognised that many of the researchers then overlooked an aspect of learning which to them was important, and that was learning through observation. Hence, he led his team to start a research work on Social Cognitive Theory. This theory highlights the idea that most of the learning occurs in a social environment. The process by which learning takes place in the environment which was analysed by the researcher was learning by observation. In his casual model, behavioural cognitive and other personal factors and environmental events are said to operate as interacting determinants that influence one another.

The researcher explained that people, through observation acquire knowledge of rules, skills, strategies, beliefs and attitudes. Also, Bandura explained that individuals also learn about the usefulness and appropriateness of behaviours by observing models and the consequences of model behaviour and they are said to act in accordance with their beliefs. The theory centres on behaviour of learners and in this respect, three processes of modelling were established and the first was cognitive modelling which was described as demonstrated models with verbal descriptions of model's thought and actions. The second model of learning propagated in the theory was that learning is internal and the third was explained to be that learning behaviour should be goal-directed.

Similarly, three types of behaviour reinforcement were acknowledged, which are direct reinforcement. This is the type of reinforcement that was said to be experienced directly by the learner. The vicarious reinforcement which is the second one is the reinforcement which emanates as an outcome of the consequences of the behaviour of the model and self-reinforcement that emanates out of feelings of satisfaction or displeasure for

behaviour grouped by personal performance standards. According to Bandura (2008), human competencies require not only skills, but also self-belief in one's capability to use the skill very well.

The theory established that self-regulatory behaviour that is self-management behaviour is essential to the learning process. Self-regulatory behaviour which equally means self-management behaviour was explained to be the process in which a learner uses his own thoughts and actions to achieve a goal. The self-regulated learner usually focuses on his identified goal and maintains his own strategies to reach the goal. The importance of self-regulation is further emphasised in learning as an essential tool that makes people to maintain a behaviour that is found essential to reach the set goal. Self-management was explained to have three components which help to achieve learning. They are goal setting, self-assessment and self-reinforcement. Goal setting is noted to establish a purpose for one's action and it provides a means of measuring the progress achieved. Self-observation centres on the process established by the learner to monitor his own progress systematically. For every self-assessment by the learner, he has to make his goal specific and qualitative in nature.

However, Bandura, later in his learning theory introduced two components which he described to be very important to his learning theory. They are self-regulatory and self-efficacy systems. He said that these systems are based on cognitive process that perceives, evaluates and regulates behaviour and he explained that people with weak belief in their self-efficacy/self-management cognitive, motivational, emotional and selective processes are found to shy away from difficult tasks, have low aspiration and weak commitment to the goal they choose. He added that such people maintain a self-diagnostic focus rather than how to perform and also   dwell on personal deficiencies, obstacles and adverse outcome.

Other behaviours attributed to people with weak belief in their self-efficacy/self-management include attribution of failure to deficient capabilities, as they are said to quickly slacken their effort or give up quickly in the face of difficulty. They are said to be slow to recover their sense of efficacy after failures or setbacks and they are revealed to be individuals that are prone to stress and depression. On the other hand, Bandura explained that people with strong belief in their self-efficacy and self-management set challenging goals and sustain strong commitment to their goals as they are said to approach difficult tasks as challenges rather than as threats. People with strong belief in the self-efficacy and self-management according to Bandura do maintain a task diagnostic focus and they attribute failures to insufficient efforts   in the face of difficulties.

Other features highlighted about people with strong belief in their self-efficacy and self-management are that such people quickly recover their sense of efficacy after failure or setback and that they display low vulnerability to stress and depression. Research by Locke and his co- researchers shows how people's beliefs in their capability improve their productive creativity and the more the higher goals they set the more they remain committed to achieving their goals and the more they are said to be productive in coming up with creative ideas.

The relevancesof this theory can be brought to bear on the effort and behaviour required by the researchers in agriculture research institutes in Nigeria to invent technologies through scientific research and also publish their findings in scholarly publication output for their colleagues and the public. To attain this feat, research staff must be people with strong belief in their self-efficacy and self-management. This is because research processes have challenges and only people with features associated with strong belief in their self-efficacy and self-management can make the required impact in finding solutions to agricultural problems and equally publish in scholarly publication output for others to learn from their research works.

2.12.2 Achievement Motivation Theory

Achievement Motivation Theorists focused their research attention on behavioural competence. According to Wigfield and Eccles (2002), achievement theory attempts to give explanation to people's choice to achievement in tasks, persistence on those tasks, vigour to carry them out, and lastly their performances to make achievement happen on the tasks. Expectancies and values are assumed to be promoted by task-specific beliefs which were explained to include beliefs on ability, the perceived difficulty of different task, individual goals, and effective memories.

The highlighted social cognitive variables are said to be equally influenced by individuals' perception of their own previous experiences and a variety of socialisation influences (Wigfield and Eccles, 1992). In everyday life, individuals strive to be competent in their activities, and the desire for success has been identified as an important determinant of success and accomplishing behaviours put up along the processes of performing the activities. Ryan (1992) explained that there are two kinds of achievement motivations. One of them, according to the theorists, orient around avoiding failures through self desire and the other was said to be around the move to create task for positive steps of attaining success.

To attain success, intrinsic motivation and personal goal analysis are explained to promote drive for achievement. The understanding of a goal and the importance attached to it was said to promote intrinsic motivation by fostering perception of challenge, encouraging task involvement, generating excitement and supporting self-determination. Similarly, the personal goal analysis revealed that the path to get a task done is for the individual to create task-specific guidelines for performance. These include an individual performing certain actions and embracing situation-specific orientation that represent purposeful achievement activity like demonstrating competence, relationship to others in a particular task, manifesting personal intrinsic effort that symbolises achievement pursuit like getting good grades. Also, setting self-standards and future self-images which are designed to achieve future goals and success.

Intrinsic motivation is generally described as an important factor in everyday life. Human beings' basic behaviours and feelings are said to be affected by the inner drive to succeed over life's challenges while we set goal for ourselves. Our self- motivation promotes other behaviours that are necessary to achieve the set goal. These include competency and self-esteem behaviour. These behaviours are explained to provide people with means to compete with others in order to better themselves and to seek out new information to learn and absorb (Fanimo 2011).

The effects of achievement motivation theory on this study can be highlighted to include the importance of intrinsic motivation to drive individual researcher to motivate himself. A self-motivated researcher is expected to manifest self-management features which are necessary to enhance research and support writing of scholarly publication output. Wigfield and Eccles (2000) explained that motivation theory has very strong ties to behavioural psychology. Both intrinsic and extrinsic motivations are usually attributed to desire for positive outcome. Also, motivation achievement theory can be used to strengthen positive academic behaviour which can enhance innovative research and quality scholarly publishing among research staff in national agricultural research institutes.

2.12.3 Campbell Model of Job Performance

The concept of job performance belongs to industrial and organisational psychology. It is the branch of psychology that deals with the workplace. It essentially centres on whether a person performs his job well or not Job performance is key to an organisation because it

determines the existence of the organisation since organisational outcomes and success is derived from the performance of the employee.

According to Campbell, McCloy, Oppler and Sager (1993), job performance is an individual variable. In their view, job performance is what a single person does and it is different from organisational performance or emotional performance which is more encompassing because they are of higher-level variables than job performance. Campbell, McCloy, Oppler and Sager (1993), introduced some exceptions to job performance. They clarified that performance may not be directly job serviceable actions in an employee. As explained by these authors job performance can consist of mental productions such as answers or decisions. The authors explanation on performance is centered on behaviour most often, from the employee.

Campbell, McCloy, Oppler and Sager (1993), differentiated job performance of an employee from outcomes. According to them, outcomes are the results of an individual's performance and there are factors that determine outcomes than just an employee's behaviour and actions. Among the key features of job performance highlighted in Campbell's Theory of Job Performance is that job performed by an employee must be relevant to the organisational goal, hence activities where efforts are expanded towards achieving personal goal are not associated with job performance. Job performance is not seen as a single unified construct. This is because there are many jobs, each with a different performance standard; hence job performance is conceived as a multidimensional construct of more than one kind of behaviour. In their effort to distinguish various job performances, Campbell , McCloy, Oppler and Sager .(1993) proposed an eight-factor model of performance based on factor analytic research that attempts to explain ingredients of job performance across all jobs. The first factor is task specific behaviours. He explained that there are behaviours which are said to be core to substantive tasks which separate core jobs from others.

The second factor is non-task specific behaviours. These groups of behaviours are required to be undertaken by an individual to perform the job, but the tasks are not strictly restricted to a particular job. For example, in product marketing, the effort made by a salesman to show a particular product to a potential customer is regarded as a task -specific behaviour whereas the process of training a sales person is explained as a non-task specific behaviour. The third task identified is communication which could be written or oral. Employees are expected to make formal and informal oral and written communication in the course of performing their duties. In evaluating the job performance of the employee on

communication, the evaluation is not strictly based on content of the communication but also on the adeptness with which the employee delivers the communication.

The fourth factor highlighted in the theory to differentiate job performance task is effort committed to the job by individual employee. The assessment happens from day to day or specifically when the organisation has specific extraordinary circumstances. Hence, effort is assessed on the level of commitment put into getting a job done.

Personal discipline of an employee is also part of the factors recognised in job performance of an employee. The individual employee is expected to be in good standing with the law; he does not abuse alcohol, does not smoke, etc. Sustenance of team work spirit is another factor on which individual employee's job performance is based. Performances of some tasks in the organisation do often involve the working together of different categories of employees. Performance in this situation may include the degree to which a person helps out the groups and his or her colleagues. The expected performance may include how the person acted as a good model, coached others, quality of advice or help given to maintain group goals.

The process of performing the supervisory or leadership component of a job is also a recognised factor for assessing job performance in Campbell's theory. It is expected that an employee shouldered with the responsibility of supervisory role does it to achieve organisational goal. Hence, the performance in this regard will include how rewards and punishments are delivered among the work force being supervised. This aspect of performance happens face to face among employees. The eighth factor conceived by Campbell in assessing job performance is management of responsibilities associated with managerial and administrative tasks. The performance at this level entails those aspects of a job which serve a group or organisation as a whole but in which the employee does not require direct supervision. The assessment at this level is that of a managerial task, and the tasks include setting an organisational goal, and responding to external stimuli to assist a group in achieving its goal. In addition, managers are expected to be involved in monitoring group and individual progress towards goals and monitoring organisational resources.

Campbell, McCloy, Oppler and Sager (1993) associated the determinant of job performance component to individual difference and they are based on three main determinants. These determinants are declarative knowledge, procedural knowledge and skill, and motivation. Declarative knowledge was classified to be knowledge about facts, principle and objects. It includes knowledge or idea on a given task. It can further be described as

ability of an employee to know what to do on a task related to the goal of the organisation. However, the procedural knowledge and skill which is the second determinant is when an employee knows how to do what he is expected to do on a particular task that relates to the organisational goal. Hence, procedural knowledge involves cognitive skill, perceptual skill and interpersonal skill of an employee.

The last determinant of job performance as postulated by Campbell is motivation which he explained to be a combined effort from three choice behaviours. These are choice to expand effort, choice of level of effort to expend, and choice to persist in the expenditure of that level of effort. Elaborating further on job performance, Campbell, McCloy, Oppler and Sager (1993) mentioned some performance parameters that may have important implications for job performance setting. A systematic analysis of the theory of job performance will reveal its relevance to this study. Generally, the assumption that an employee will perform very well on the job is the reason why he was employed by the employer, so job performance is central to the organisation. The assessment of individual research staff is undertaken to identify their strengths and weaknesses in order to design training programmes and to take correct decisions on placement to perform one responsibility or the other. All these job performance related activities are noticeable in the national agricultural research institutes. Hence, job performance is a construct that is central to productivity which in the case of NARIs is invention of technologies to solve agricultural problems and publishing of research finding in scholarly publication output.

Campbell's job performance theory brings to light features that promote productivity among employees in an organisation. For example, Benjamin (2015) explained that no personal success, achievement or goal can be realised without self-management. Similarly, Rubio (2004) confirmed that generally self-esteem is one of the central drives in human beings. All these variables which are highlighted in this study are key features to Campbell's conventional job performance. Hence the theory is suitable for this study.

A close look at the three theories selected for this study which is social cognitive theory, achievement motivation theory and Campbell's job performance model reveals that they have some similarities on how their concepts have relevance to the study. The three of them have variables that interact together to lead to achievement of set goal. The socio cognitive theory highlights relationship in the interaction in social environment factors that affect one another. These factors include the behavioural cognitive and personal factors. The interaction is reinforced by direct, vicarious and self-reinforcement.

The reinforcement is propelled by self-regulatory behaviours. Similarly, the motivation theory can be related to positive reinforcement. Both intrinsic and extrinsic motivations are attributed to desire to achieve positive outcome either because of the desire to benefit from the pleasure gained by accomplishing the task or because of rewards like money which sometimes follow success or social status like self-esteem that is expected in future. Similarly, Campbell's job performance model highlighted factors that support job performance among employees. Some of the factors are related to organisational behaviour while others could be linked to personal attitude of the employer.

The multidimensional factors highlighted by Campbell emphasised personal effort of the individual to get his job done to achieve the organisational goal. The model recognised the need for self- management by an employee to meet a standard that will make the individual to put in the required energy to give quality leadership and communicates rightly to get good result from the audience to complete a task correctly and timely. An individual's performance is essentially assessed based on daily effort at work and quality of input when there are special jobs to do within the organisation. Quality job performance requires personal reinforcements which are features of self-management that are important for enduring research activities which research staff in National agricultural research institutes are expected to possess to attain quality job performance that will make individual research staff achieve self-esteem in the Institute and among professional colleagues.

2.13   Conceptual model

The conceptual model for the study was conceived by the researcher. The model which is illustrated in Fig 2.1 shows the processes by which the study was conceived and carried out. The model explains the interaction and relationship that exist between the independent variables which include self-management, awareness of e-resources and use of e-resources and the dependent variable which is scholarly publication output of the researchers. The conceptual model revealed that self-management features are important behavioural trait that must manifest among researchers before   they can think and act rightly about all that are required to improve their scholarly publication output.

The manifestation of self-management practices among researchers is expected to support the researchers in setting of goals along the organisational goals .Based on the researchers desire for enhancement of their scholarly publication output on the mandate of the institute where they work, they are expected to monitor themselves and evaluate their

activities to conform with the processes that will lead to the attainment of the goals they have set.

The possession of self-management features by the researchers is also expected to help the researchers to build strong working ethics that will make them achieve their goal. The working ethics include good communication both in oral and written format, establishment of good relationship with colleagues and other groups of personnel around them most especially those that will contribute to the attainment of their goal. The researchers must manage time effectively so that the conduct of research and production of scholarly publication output can be achieved promptly through effective project management.

To achieve the set goal, self-management features that drive the researchers will make the researchers to think critically on how to attain the set goal so that they can effectively recognise what they need to achieve their set goal and where and how to get them. The thinking of the researcher will guide them to make good judgement about the value of information required to support them to achieve the set goal.

The desire for improvement in research and scholarly publication output is expected to be of great importance to researchers with self-management features. The self-management features in the researchers will help them to respond promptly to awareness programmes on e-resources by the institutes' libraries. The embracement of awareness programmes on e-resources is expected to improve their consciousness and knowledge about different information sources where the researchers can access comprehensive, correct and timely scholarly information that will support the attainment of set goals. Some of the e-resources the researcher will know about are online database, e-books, e-journals, e-dictionaries, etc. The desire to boost research and scholarly publication output which is the evidence of productivity of researchers will make them to recognise the importance of electronic resources and learn skills to use them to derive their maximum benefits.

The self-management features possessed by the researchers will sustain their desire to improve their scholarly publication output and they will enhance their frequent use of e-resources. Because the researchers are using the e-resources to improve their research and scholarly publication output, they will learn necessary skills that will make them maximise the use of e-resources.

The benefits derived from frequent use of the e-resources will enhance the conduct of research and scholarly publication output of the researchers. Some of the scholarly publications that will be produced by the researchers include journal articles either online or

in print format, books as a single author or co- authored on the mandate of the institutes. Other scholarly publications that will be produced by the researchers are technical reports, publication in grey literature and conference proceeding.

The enhancement of scholarly publication output of the researchers is expected to attract some benefits to Nigeria as a country, the organisation where the researchers are working and to the researchers individually and collectively. Some of the benefits that the enhancement of scholarly publication may attract include raising the status of Nigeria among the community of Nations; it will also be an indicator of performance for the research institutes. It will attract collaboration for the institutes and the researchers. It will enhance the status of the researchers, improve their chance of being promoted and also give them higher responsibilities and training. The enhancement of scholarly publication could attract grants from the government and external donors to the research institutes. The improvement in scholarly publication can also lead to attainment of increase in food production and improvement of the nation's economy.

Generally, the concepts of the conceptual model for the study expect all actions that will lead to improvement of scholarly publication output of the researchers to be enhanced by self-management features which will influence actions like awareness of good information sources and their frequent use by the researchers to achieve improved scholarly publication output of the researchers.

Conceptual framework for the study

Self-Management
- Set Goals
- Self-monitoring and self-evaluation
- Strong work ethics
- Manage time and project effectively
- Think critically
- Making judgment about the value of information

Awareness of E-Resources
- Become familiar with e-resources, e.g- online database, e-books,e-journals, etc
- Recognition of the importance of e-resources to research initiative
- Development of interest to know about e-resources
- Learning the skill to use it

Use of E-Resources
- Level of importance researchers attach to E-Resources
- Basic computer skill of how to search information in the database
- Purpose of use of e-resources
- Frequency of use of e-resources
- How useful they find it

Scholarly Publication Output
- Journal articles: online and /or print format (Print or e-journal)
- Books (Print or e-books) written by a single author or joint authors related to the research mandate of the institute
- Technical reports: reports that describe the processes, progress or result of research or survey on national issues related to the mandate of the institute
- Chapter(s) in Book e.g entries in edited book, entries in encyclopaedia, dictionaries and reference work, entries in textbooks incorporating significant research content
- Grey Literature
- Conference Proceedings
- Improvement in scholarly publication output of researchers may attract:
  - Improvement in ranking of Nigeria among communities of nations
  - Improvement in food production and nation's economy
  - Recognition of the research institute for more support and increase research
  - More research collaboration
  - Grant from government and external donors
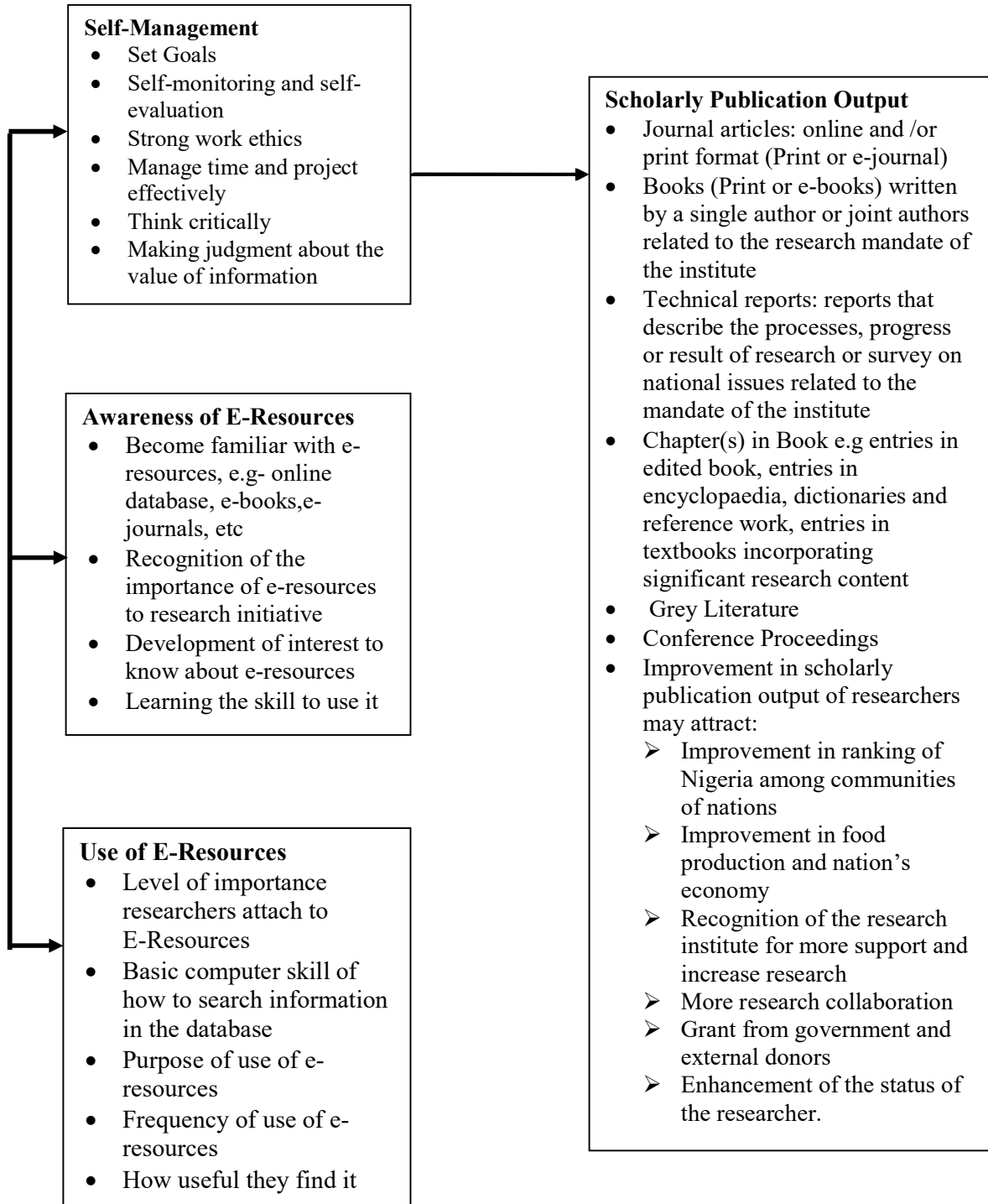 - Enhancement of the status of the researcher.

Fig. 2.1: Conceptual model of self-management, awareness and use of e-resources as predictors of scholarly publication output among researchers in NARIs

Source: Self-conceived by the researcher.

2.14   Appraisal of the literature reviewed

Some research investigations have been done in different areas of electronic information resources. Some of the research investigations that have been conducted in the area of electronic information resources centered on awareness and use of electronic resources among students, researchers and lecturers in the universities and other tertiary institutions. Similarly, studies have been carried out extensively on the assessment of the level of availability and accessibility of e-resources in different tertiary institutions. However, it has been observed that limited studies have been conducted on the awareness and use of e-resources where researchers in agricultural research institutes were employed as population for the study. The population used in most studies on awareness and use of e-resources were students from a particular department in a university, polytechnic and other tertiary institutions like colleges of education and colleges of agriculture.

Also, there are quite a number of studies conducted to find out how the use of e-resources have impacted on teaching, research of lecturers and learning among students at different levels in tertiary institutions. However, I could not find any publication where a behavioural trait was considered along with awareness and use of e-resources to determine how the variables can relate to improve scholarly publication output of researchers.

This study therefore has tried to fill the gap by considering self-management features of researchers in National agricultural research institutes in Nigeria, the level of awareness of e-resources among the researchers in the institutes and the frequency of their use of the e-resources so as to determine if the variables will serve as predictors of scholarly publication output among researchers in National agricultural research institutes in Nigeria.

CHAPTER THREE
METHODOLOGY

3.1   Introduction

This chapter describes the methodology adopted in the study which has been discussed under the following sub-headings: research design, population of the study, sampling technique and sample size, research instrument, validity and reliability of the instrument, data collection procedures and method of data analysis.

3.2   Research design

The survey research design of the correlational type was used in the study. This design was used because according to Babbie (2012), survey research design is the best method suitable for social scientists that are interested in collecting original data for describing a population that is too large to observe directly. Also, Wyse (2012) emphasised that survey research design is extensive in the sense that it is useful in describing the characteristics of a large population. According to Wyse, no other research method provides the capability which ensures a more accurate sample to gather target results that are meant to draw conclusions and make important decisions. The design was also regarded as being flexible and can be administered through many modes. Wyse (2012) further described it as a dependable research design because the anonymity of survey allows respondents to answer with more candid and valid answers. Therefore, with its usage, it was envisaged that honest and unambiguous responses were gathered from target population for the study.

3.3   Population of the study

The population of the study was researchers in fifteen agricultural research institutes in Nigeria. The population of researchers for this study was 1089 spread across all the fifteen Nigerian agricultural research institutes. This forms the total population of staff identifiable as researchers in the fifteen National agricultural research institutes in Nigeria presently under the supervision of Agricultural Research Council of Nigeria. Table 3.1 shows the distribution of population of researchers in NARIs by institutes across Nigeria.

Table 3.1 Population of researchers in NARIs by institutes across Nigeria

S/N	Name of The Institutes	Geo-political Zone	Researchers' Population in each institute
1.	Cocoa Research Institute of Nigeria (CRIN), Ibadan	South-West	68
2.	Institute of Agricultural Research and Training(IAR&T), Ibadan (owned by Obafemi Awolowo University, Ile- Ife)	South-West	65
3.	National Institute for Horticultural Research (NIHORT), Ibadan	South-West	72
4.	National Institute for Oceanography and Marine Research (NIOMR) Lagos	South-West	67
5.	Nigerian Stored Products Research Institute(NSPRI), Ilorin	North-Central	121
6.	National Cereal Research Institute (NCRI), Badegi	North-Central	62
7.	National Veterinary Research Institute of Nigeria (NVRI), Vom	North-Central	75
8.	National Institute for Freshwater Fisheries Research (NIFFR), New Bussa	North-Central	55
9.	National Animal Production Research Institute (NAPRI), Zaria (owned by Ahmadu Bello University, Zaria.)	North-West	47
10.	National Extension and Research Liaison Services (NEARLS), (owned by Ahmadu Bello University Zaria)	North-West	80
11.	Institute of Agriculture Research (IAR), Zaria (owned by Ahmadu Bello University Zaria)	North-West	71
12.	Rubber Research Institute of Nigeria (RRIN), Benin	South-South	58
13.	National Institute for Oil Palm Research (NIFOR), Benin	South-South	67
14.	Lake Chad Research Institute (LCRI), Maiduguri	North-East	53
15.	National Root Crops Research Institute (NRCRI), Umudike	South-East	128
	TOTAL		1089

Source: Websites of the institutes and personal contact with the institutes through administrative and research staff (2017)

3.4 Sampling technique and sample size

The fifteen National agricultural research institutes participated in the study and total enumeration method was used to cover all the 1089 researchers in NARIs. Total enumeration was adopted because there was the need to have a total view of all the researchers in NARIs since these groups of staff differ in discipline, cadre, and location and in types of management structure being used to administer the institutes. While all of them are governed by ARCN, there are some among them that are affiliated to universities, this could make them to have a slight difference in administrative structure but the core responsibility of researching into the mandate of the institute is the same across the research institutes. The population size for this study was 1089 researchers. This figure was considered manageable to adopt the use of total enumeration sampling technique because the population though spread across the country they can be researched for the administration of questionnaire without much hindrance. Horse (2018) also revealed that the total enumeration sampling technique helps to eliminate possible errors during the sampling process and also helps the researcher to have a deeper insight of the population. Hence, the researcher will have opportunity to take notice of every unit of the population than partial sampling methods. Therefore, the use of the total enumeration method revealed the uniqueness in the population thereby eliminating any guess work.

3.5 Data collection instrument

The research instrument used for this study was questionnaire. The section of the instrument on self-management was a modification of an instrument earlier used for a similar study at Hawal'l University. The other sections of the questionnaire were developed by the researcher. All the sections of the questionnaire are described under sections A-E.

Section A contained questions relating to background information of researchers in NARIs, name of the institute, name of department, area of specialisation, age, educational qualifications, years of working experience or job tenure.

Section B elicited information on self-management of the researchers. The self-management instrument modified was designed and used by Mezo (2005) in a dissertation submitted to the University of Hawal'l for the award of Doctor of Philosophy in Psychology. The instrument which consisted of 15 items had response format of the four (4) point scale of: never true of me (NTM)=1, a little of time true of me (LTM) =2, some of the time true of me (STM)=3, and most of time true of me (MTM) =4.

Section contained information on the number of scholarly publication output of the researchers. It had eight items. The examples of the typical items included textbooks, chapters in books, co-authored books, patents, seminar papers, journal articles, conference proceedings and technical reports.

Section D was designed to capture relevant information from the researchers about their level of awareness of the twenty-nine e-resources listed in the instrument. The questionnaire had four (4) point scale of: Not very aware (NVA) =1. Not aware (NA) =2, fairly aware (FA) =3, and Very aware (VA) =4.

Sections E contained items that captured information from respondents on frequency of the use of twenty-five listed e-resources in the instrument. The response format was: daily (5) weekly (4) monthly (3) quarterly (2) annually (1).

Table 3.2: Questionnaire administration and response rate

S/N	Institutes	Number Distributed	Responded Frequency	Percentage Response Rate
1.	Cocoa Research Institute of Nigeria (CRIN), Ibadan	68	52	76.5
2.	Institute of Agricultural Research and Training (IAR&T) Ibadan (owned by Obafemi Awolowo University, Ile-Ife)	65	52	80.0
3.	National Institute for Horticultural Research (NIHORT), Ibadan	72	69	95.8
4.	National Institute for Oceanography and Marine Research (NIOMR), Lagos	67	55	82.1
5.	Nigerian Stored Products Research Institute (NSPRI), Ilorin	121	93	76.9
6.	National Cereal Research Institute (NCRI), Badegi	62	51	82.3
7.	National Veterinary Research Institute (NVRI), Vom	75	57	76.0
8.	National Institute for Freshwater Fisheries Research (NIFFR), New Bussa	55	31	56.4
9.	National Animal Production Research Institute (NAPRI), Zaria owned by Ahmadu Bello University Zaria	47	35	74.5
10.	National Extension and Research Liaison Services (NEARLS), (owned by Ahmadu Bello University, Zaria).	80	73	91.3
11.	Institute of Agricultural Research (IAR), Zaria (owned by Ahmadu Bello University, Zaria)	71	65	91.5
12.	Rubber Research Institute of Nigeria (RRIN), Benin	58	33	56.9
13.	National Institute for Oil Palm Research (NIFOR), Benin	67	59	88.1
14.	Lake Chad Research Institute (LCRI), Maiduguri	53	25	47.2
15.	National Root Crops Research Institute (NRCRI), Umudike	128	118	92.2
	Grand Total	**1089**	**868**	**79.7**

The table 3.2 gives information about the questionnaire administration for the study and the details about the response received from the respondents. The results from Table 3.2 revealed that National Root Crops Research Institute (NRCRI) had the highest number of respondents with 118 representing (13.6%) and92.2 % return rate. This was followed by Nigerian Stored Products Research Institute (NSPRI) with 93 respondents (10.7%) and 76.9 % return rate. National Extension and Research Liaison Services (NEARLS) had the next highest number of respondents with 73(8.4%) and 91.3% return rate. Table 3.2 also shows the following institutes as the last three institutes with the least response and return rate. The institutes are Rubber Research Institute of Nigeria (RRIN) 33(3.8%) and 56.9% return rate, National Institute for Freshwater Research (NIFFR) 35 (3.6%) and 56.4% return rate while Lake Chad Research Institute (LCRI) had the least respondents 25 representing (2.9%) and 47.2% return rate.

3.6   Validity and reliability of research instrument

To validate the questionnaire, the researcher went through the guidance of the supervisor to seek opinion of experts in the area of self-management and ICT. For experts in self-management the researcher sought the opinion of a psychometrician. The section of the questionnaire on awareness and use of e-resources was re-affirmed by an expert in Information and Communication Technologies (ICT) and a librarian. The comments, suggestions and observations by the experts were used to justify the adequacy and relevance of the contents of the instrument.

To achieve the content reliability of the questionnaire for data collection in this study, thirty respondents outside the envisaged population for the study were identified and thirty copies of the questionnaire were administered on them. The respondents were researchers from National Centre for Agricultural Mechanisation (NCAM) Ilorin, Kwara State, Nigeria. The centre is a research organisation with a national mandate to research in agricultural mechanisation. The centre based on the administrative grouping done by the Federal Ministry of Agriculture and Rural Development in Nigeria for agencies under her, NCAM was not grouped among the institutes that were supervised by ARCN; hence it does not form part of the population for this study. The data collected from the researchers in NCAM from the test re-test method of two weeks interval were analysed using Cronbach's Alpha technique to determine the reliability co-efficient of the sub scales in the questionnaire with the exception of the scholarly publication output scale. The reliability coefficient of each of the sub scales is as follows: Self-management; r = 0.77; Scholarly publication output before 2009 and

within the period of 2009-2016; r= 0.79; awareness of e-resources; r=0.71 and the use of e-resources; r = 0.92. The overall reliability of the scale was 0.80s. Based on Nunnally (1978) who recommended that reliability of 0.70 for the measuring instruments are considered highly reliable for data collection for a study, therefore the questionnaire was adjudged as suitable instrument for the study.

3.7 Data collection procedure

The researcher administered the questionnaire through personal visit to some of the research institutes. To get desired assistance from the management of the research institutes, a letter of introduction was collected from the HOD, Library, Archival and Information Studies, University of Ibadan, Nigeria. Similarly, a letter of introduction from the Executive Director/Chief Executive Officer of Nigerian Stored Products Research Institute (NSPRI). to all other 14 NARIs chief executives that formed the population for the study was collected so that the Executive Directors in each institute can assist to facilitate contact with the researchers in their institutes. The Executive Director of NSPRI was at the time of administering the instrument for the study the chairman of association of Executive Directors in NARIs. Also, the assistance of all the heads of library and other relevant senior members of staff in the institutes were sought to help facilitate the distribution and collection of the instrument after completion.

The researcher also engaged the services of fifteen research assistants who worked with the senior members of staff contacted in the institutes. These set of people were well informed of the responsibilities expected of them in the administration and retrieval of the instrument of the study.

3.8 Method of data analysis

The data from the questionnaire were analysed using descriptive statistics which included means, standard deviation and variance. The hypotheses 1-6 were analysed using simple correlation analysis based on Pearson Product Moment Correlation (PPMC) method. Hypothesis 7 and 8 were analysed using multiple regression analysis which was found to be suitable for analysis because of the multivariate nature of the study. The multiple regression analysis was used to predict and find the relationship between the dependent and independent variables. The margin of error for the testing of the hypotheses was set at 0.05 level of

significance. The statistical package for social science (SPSS) was used for the coding of data and their analysis.

3.9 Ethical Consideration for the Study

I Akande Femi Titus hereby state that this thesis was written by me and information materials that I made reference to, in the course of writing this thesis were duely acknowledged at the reference section of this work. To further confirm my declaration that I wrote this thesis, I wish to discuss the following indicators as mark of ethical consideration adhered to in the course of writing the thesis.

(a) **Confidentiality**: The respondents used for this study are researchers in the 15 National agricultural research institute in Nigeria. The instrument used to collect data from the researchers was a questionnaire. To gain the confidence of the respondents so that they can freely and comprehensively answer the questions in the questionnaire, it was stated clearly in the questionnaire distributed to the respondents that all the answers they will provide to the questions in the questionnaire shall be used for the research work only and this assurance given to the respondents was consciously adhered to by me.

(b) **Informed consent**: Respondents were informed as part of the guidance for the completion of the questionnaire, which formed the first page of the questionnaire that their participation was voluntary. The purpose for which the questionnaire was designed and administered was stated. The assurance given to the respondents in this regard was that their responses shall be used for the research work alone and nothing more. This claim can be verified in the questionnaire in Appendix I of this work.

(c) **Plagiarism**: The thesis was subjected to Turnitin plagiarism software. This was done to check the level of the originality of the content of the work .The outcome of the plagiarism test using Turnitin software was 23%. The certificate issued is attached as Appendix III.

(d) **Falsification and fabrication of data**: In this study, no falsification of any data took place. The researchers only used the data collected from the respondents. Also, the data collected was not exposed to any form of manipulation. Added to these the researcher reported only the finding that emanated from the analysis of the data collected.

(e) **Risk concern**: The respondents for this study were researchers in National agricultural research institutes in Nigeria. The questions they were requested to

answer in the questionnaire designed for this study were essentially on issues that are related to the aspect of their primary assignment at the place of their work which did not carry any restriction tag. Hence, the risk of being accused to given out official information does not arise. Also, the exposure of the respondents to any form of risk either as a person or their organisation in the future may not occur, because the completion of the instrument by the respondents was to further stimulate the process of enhancement of their productivity.

(f) **Beneficence**: The study centered on the improvement of productivity of the researchers in NARIs by enhancing their ability to publish more quality scholarly publication output. In view of the potential of the study to add value to their career, the participants were greatly involved in responding to the questions outlined in the instrument. The views expressed in the questionnaire show the strength and weakness of the independent variables on the scholarly publication output. The guidance provided from the findings of the study can stimulate more research, writing of scholarly publication output and consequently enhancement of the personality of the researchers and the Gross Domestic Product GDP of the country at large.

3.10 Questionnaire response rate

The population size for the study was 1,089 researchers in National agricultural research institutes spread across all geo-political zones of the country. However, from 1,089 samples of the instrument distributed, a total of 868 were returned and found useful. This gives 79.7% return rate. The returned questionnaires were all valid to be used for the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1   Introduction

This chapter presents the results and discussion of the data collected through the questionnaires distributed among researchers in National agricultural research institutes. The chapter discusses the interpretation of the data, the demographic features of the respondents, the presentation of research questions, presentation of hypotheses and the discussion of the findings.

4.2   Demographic information of the respondents

Table 4.1 reveals the distribution of the respondents by academic qualification

Table 4.1: Distribution of the respondents by academic qualification

Qualification of Researcher	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor Degree	175	20.2	20.2	20.2
Master's Degree	446	51.4	51.4	71.5
Ph.D	237	27.3	27.3	98.8
Others	10	1.2	1.2	100.0
Total	868	100.0	100.0	100

Table 4.1 revealed the highest qualification of the respondents. The table also shows the frequency and the percentage of the qualification of the respondents. The results as shown in Table 4.1 indicated that respondents with master's degree totalled 446 (51.4%). They constituted the majority, followed by respondents with Ph.D 237 (27.3%) and respondents with bachelor degree 175 (20.2%). Others whose academic qualifications were not identified were 10 (1.2%).

Table 4.2 shows the distribution of the respondents by job tenure.

Table 4.2: Distribution of respondents by job tenure

Job Tenure	Frequency	Percent	Valid Percent	Cumulative Percent
0-10 Years	568	65.4	65.4	65.4
11-20 Years	194	22.4	22.4	87.8
21-30 Years	88	10.1	10.1	97.9
31-40 Years	18	2.1	2.1	100.0
Total	868	100.0	100.0	

Table 4.2 revealed the job tenure of the respondents. The results showed that respondents numbering 568 (65.4%) hold job tenure of 0-10 years. This is followed by 194 respondents (22.4%) who hold a job tenure of 11-20 years and 88 respondents (10.1%) hold a job tenure of 21-30 years while 18 which was (2.1%) of the respondents hold a job tenure of 31-40 years.

Table 4.3 reveals the age distribution of the respondents

Table 4.3: Age distribution of the respondents

Age	Frequency	Percent	Valid Percent	Cumulative Percent
21-30 Years	119	13.7	13.7	13.7
31-40Years	349	40.2	40.2	53.9
41-50 Years	249	28.7	28.7	82.6
51-60 Years	115	13.2	13.2	95.9
61-70 Years	35	4.0	4.0	99.9
70 + Years	1	.1	.1	100.0
Total	868	100.0	100.0	

Table 4.3 is the table provided to show the age distribution of the respondents. From the table it can be observed that researchers at ages 31-40 years constitute the majority of the participants in the study. This age group is 349 (40.2%). This was immediately followed by researchers between ages 41-50 years with 249 (28.7%) and 21-30 years with 119 (13.7%). Others are researchers at ages 51-60 years 115 (13.2%), 61-70 years 35 (4.0%) and 70 years and above 1 (0.1%).

4.3a   Career status of the respondents

Two tables were used to show the career status of the respondents in this study. This is so because respondents for the study were grouped into two based on their career status at work. The first group was those who used nomenclature associated with civil service structure in Nigeria. They work in research institutes that are not owned by any universities, but report their activities directly to the management of ARCN and the Hon. Minister of Agriculture of Nigeria. The research institutes in the first group are 11 in number and they include Cocoa Research Institute of Nigeria (CRIN) Ibadan, National Institute for Horticultural Research (NIHORT) Ibadan, National Institute for Oceanography and Marine Research (NIOMR) Lagos, Nigerian Stored Products Research Institute (NSPRI) Ilorin, National Cereal Research Institute (NCRI), Badegi, National Veterinary Research Institute (NVRI) Vom, National Institute for Freshwater Fisheries Research (NIFFR) New Bussa. Rubber Research Institute of Nigeria (RRIN) Benin, National Institute for Oil Palm Research (NIFOR) Benin, Lake Chad Research Institute (LCRI) Maiduguri and National Root Crops Research Institute (NRCRI) Umudike. The second group of respondents was researchers from institutes owned by a university. The researchers in this group of research institutes are 4 in number and they used career nomenclature obtainable in universities. The institutes in the second group are Institute of Agricultural Research and Training (IAR&T) Ibadan, National Extension and Liaison Services (NEARLS) Zaria, Institute Agricultural Research (IAR) Zaria and National Animal Production Research Institute (NAPRI). Hence, Table 4.3a shows the career status of respondents from research institutes that are not owned by any university while Table 4.3b shows the career status of respondents that work in research institutes that are owned by a university.

Table 4.3a shows the distribution of the respondents from research institutes not owned by universities based on career status.

Table 4.3a: Distribution of the respondents from research institutes not owned by universities based on career status

Career Status of Respondents	Frequency	Percent	Valid Percent	Cumulative Percent
Directors	13	1.5	2.0	2.0
Assistant Directors	24	2.8	3.6	5.6
Chief Research Officers	53	6.1	8.0	13.6
Principal Research Officers	116	13.4	16.5	31.0
Senior Research Officers	152	17.5	22.9	53.9
Research Officers I	170	19.6	25.6	79.5
Research Officers II	136	15.7	20.5	100.0
Total	664	76.6	100.0	100

Table 4.3a revealed the career status of the respondents from 11 institutes that are not owned by any university. The total respondents from this group of institutes are 664. The distribution according to their career status is as follows; Research Officer 1 cadre is the highest in number with a total of 170 respondents (19.6%). This was followed by Senior Research Officer 152 (17.5%) while next to it was Research Officer 11, 136 (15.7%). The last three cadre among the respondents as shown in Table 4.3a are Chief Research officer 53 (6.1%). Assistant Directors are the next with 24 respondents (2.8%) while Directors were the least with 13 respondents (1.5%).

Table 4.3b reveals the distribution of the respondents in research institutes owned by universities based on career status.

Table 4.3b: Distribution of the respondents in research institutes owned by a university based on career status

Career Status of Respondents	Frequency	Percent
Professor	17	2.0
Reader	28	3.2
Senior Lecturer	52	6.0
Lecturer 1	50	5.8
Lecturer 2	57	6.6
Total	204	23.5

Table 4.3b revealed the result of the distribution by career status of the researchers in research institutes owned by universities in Nigeria. The number of institutes in this category are 4 and the distribution of the career status of the respondents in the 4 institutes are as follows; Lecturer 11 are the majority with 57respondents (6.6%) followed by Senior Lecturer 52 (6.0%) and Lecturer 1, 50 (5.8%). Others were Readers 28 (3.2%) and Professors 17 (2.0%). The total number of respondents working in research institutes owned by a Nigerian university was 204 while 664 of the respondents were working in the research institutes that are not owned by any Nigerian university as reflected in Tables 4.3a and 4.3b.

4.4   Answers to research questions

      This study gave answer to five research questions

4.4.1 Research question 1: **What is the level of scholarly publication output of the researchers in NARIs?**

To answer this question reference will be made to Table 4.4 which showed the respondents' response and the analysis of the data collected from the respondents reflecting their view on their scholarly publication output. The response reflected the scholarly publication output of researchers from 2009 to 2016. The scholarly publication output of the respondents was based on the following: complete textbook written, chapters in books, co-authored textbooks, patent and certified inventions, seminar papers written and presented by respondents. Others are article in learned journals, articles in conference proceedings and technical reports.

Table 4.4 shows the Scholarly publication output of the respondents from 2009-2016.

Table 4.4   Scholarly publication output of the respondents from 2009-2016

Items	Time Period	Frequency	Percentage	Mean	Std. Deviation
Complete textbook	2009 -2016:	259	75.3	2.92	0.84
Chapters in books	2009 -2016:	229	67.8	2.89	.098
Co-authored textbooks written	2009-2016:	249	75.6	3.00	0.92
Patent and certified invention	2009-2016:	643	89.1	2.89	0.07
Seminar papers presented	2009-2016:	584	86.8	2.61	0.02
Articles in learned journals	2009-2016:	277	87.9	3.41	0.87
Articles in conference proceedings	2009-2016:	544	85.1	2.72	0.08
Technical reports	2009-2016:	517	83.5	2.52	0.043

Table 4.4 is on scholarly publication output of researchers from 2009 to 2016. It revealed that researchers in National agricultural research institutes published complete textbooks 259 (75.3%) from 2009 to 2016 with the ($\overline{x} = 2.9$ and SD 0.84). The total chapters in book written from 2009 to 2016 was 229 (67.8%) with the ($\overline{x} = 2.9$ and SD 0.98). The scholarly publications on co-authored textbooks written between 2009-2016, 249 (75.6%) with the ($\overline{x} = 3.0$ and SD = 0.92). The results on the patents and certified invention between 2009-2016,was 643 (89.1%) the x= 2.89 and SD=0.07. Articles in journals in 2009-2016, 643 (89.1%) with ($\overline{x} = 2.9$ and SD = 1.07). Articles in conference proceedings in 2009-2016, were 544 (85.1%) with ($\overline{x} = 2.7$ and SD = 1.08); while technical report written from 2009-2016, 517 (83.5%) with ($\overline{x} = 2.5$ and SD = 1.04). From these results, it can be implied that researchers in NARIs published more articles in learned journals from 2009-2016, with 643 articles which gives 89.1%, followed by seminar papers which was 544 articles and it gives 85.1%. It can also be deduced from the result that complete textbook, co-authored textbooks and chapters in books were the least scholarly publication output published by researchers in NARIs from 2009-2016.

The overall mean of the publications published from 2009-2016 is 2.87 while SD = 0.37. When the value of the overall mean is compared to the mean of each item, it shows that the overall mean was higher than the mean of 3 items which include that of technical report which is 2.52, articles in conference proceedings which is 2.72 and seminar paper presented with mean of 2.61.

On the other hand, there are five items, each has mean with a value that is more than the overall mean. The items are: complete textbooks 2.89, patent and certified invention and co-authored textbooks written which is 3.00. Based on the comparism of the value of the overall mean to the value of each item, it can be concluded that scholarly publication output of researcher in NARIs from 2009 to 2016 was moderate.

4.4.2 Research question 2: What is the level of self-management among researchers in NARIs?

To know the level of self- management of researchers in NARIs, Table 4.5 showed the response given to questions prepared to get the perception of researchers about their self-management reveals the analysis of self-management of the respondents.

Table 4.5 reveals the analysis of self-management of the respondents.

Table 4.5:Self-management of the respondents

S/N	Item	(1) NTM N %	(2)LTTM N %	(3)STTM N %	(4)MTTM N %	Mean	Std
1	I learn from my mistakes so that I will do things better in the future.	16 1.8	24 2.8	146 16.8	682 78.6	3.72	.59
2	When I do something right, I take time to enjoy the feeling.	28 3.2	67 7.7	267 30.8	506 58.3	3.44	.76
3	I can stick to a boring task that I need to finish without someone pushing me.	35 4.0	82 9.6	312 35.9	439 50.6	3.38	1.59
4	My happiness depends more on myself than it depends on other people.	66 7.6	81 9.3	219 25.2	502 57.8	3.34	.92
5	If I don't do the best possible job, I don't feel good about myself.	79 9.1	86 9.9	274 31.6	429 49.4	3.22	.94
6	If I do not do something absolutely perfectly, I don't feel satisfied.	67 7.7	104 12.0	318 36.6	379 43.7	3.16	.91
7	When I make mistakes, I take time to criticise myself.	88 10.1	148 17.1	282 32.5	350 40.3	3.04	.97
8	I get myself through hard things mostly by thinking I'll enjoy myself afterwards.	103 11.9	117 13.5	302 34.8	346 39.9	3.03	1.00
9	I criticise myself more than others criticise me.	87 10	154 17.7	335 38.6	293 33.7	3.00	1.39
10	I silently praise myself when other people do not praise me.	78 9.0	156 18.0	375 43.2	259 29.8	2.95	.90
11	I seem to blame myself and be very critical of myself when things go wrong.	64 7.4	199 22.9	346 39.9	259 29.8	2.92	.90
12	I get upset with myself when I make mistakes.	85 9.7	191 22.0	306 35.3	286 32.9	2.92	.96
13	The way I achieve my goals is by rewarding myself every step along the way.	78 9.0	197 22.7	328 37.8	265 30.5	2.90	.93
14	When I fail at something, I am still able to feel good about myself.	264 30.4	148 17.1	330 38.0	126 14.5	2.36	1.06
15	My feelings of self-confidence is not stable, it goes up and down.	384 44.2	266 30.6	149 17.2	69 7.9	1.88	.95

The key for the table:

1. Never true of me (NTM)   3.   Some of the time true of me (STTM)

2. A little of the time true of me (LTTM)   4.   Most of the time true of me (MTTM)

The results on the self-management of researchers in National agricultural research institutes is in Table 4.5 which revealed that researchers had high self-management and self-control of themselves as far as the scholarly publications were concerned. This was reflected in their responses to the items on the table, each of which revealed the mean ($\overline{x}$) greater than 2.5 which was above average. The test norm of the self-management scale was a score of 1-20 indicating low self-management, 21-40 indicate moderated self-management and 41-60 indicated high self–management. Since the overall mean of the respondents was ($\overline{x}$ = 44.76, SD=6.20), this fell within the interval 41-60, one can deduce that the respondents had high self-management. The reason being that majority of them claimed that they learnt from their mistakes so that they would do things better in the future. When they do something right, they take time to enjoy the feeling; and when they fail at something, they are still able to feel good about themselves among others.

4.4.3   Research Question 3: What is the level of awareness of E-resources among researchers in NARIs?

To know the level of awareness of e-resources among researchers in NARIs, the reaction of respondents to different questions they were asked determine their level of awareness of different types of electronic resources highlighted in the questionnaire. Table 4.6 showed the response given by the researchers to indicate the extent of their awareness of electronic resources in the instrument and from the analysis of data collected, it can be concluded that there was a high level of awareness of electronic resources by researchers in NARIs.

Table 4.6 shows the level of awareness of e-resources of the respondents.

Table 4.6: Level of awareness of e-resources of respondents

Electronic Resources	NVA N %	NA N %	FA N %	VA N %	Mean	Std. Dev.
The Essential Electronic Agricultural Library (TEEAL)	48 5.5	44 5.0	244 28.1	532 61.3	3.45	.82
Online Access to Research in the Environment (OARE)	91 10.5	171 19.7	299 34.4	307 35.4	2.9592	.98444
Access to Global Online Research in Agriculture (AGORA)	48 5.5	44 5.0	244 28.1	532 61.3	3.4550	.82360
Health Internetwork Access to Research Initiative (HINARY)	114 13.1	201 23.2	276 31.8	276 31.3	2.8181	1.02205
Agricultural Online Access (AGRICOLA)	107 12.3	196 22.6	332 38.2	23 26.8	2.8054	.97489
Agricultural Database (AGRIS)	101 11.6	226 26.1	301 34.7	240 27.6	2.79	.98
Science Direct	84 9.7	224 25.8	221 25.5	339 39.0	2.99	1.01
Elton B. Stephens Co (EBSCOHOST)	183 21.0	397 45.8	156 18.0	132 15.2	2.27	.97
Journal Storage (JSTOR)	93 10.7	273 31.4	244 28.1	258 29.7	2.80	1.00
Electronic Journals (E-Journal)	34 3.9	127 14.6	263 30.3	444 51.2	3.35	.82
E-books	26 3.0	67 7.7	271 31.2	504 58.1	3.49	1.02
Online Catalogue	63 7.3	151 17.4	292 33.6	362 41.7	3.11	.93
Encyclopaedia	41 4.7	102 11.8	193 22.2	532 61.3	3.43	.85
Internet	12 1.4	41 4.7	110 12.7	705 81.2	3.77	.55
Electronic mail	19 2.2	65 7.5	132 15.2	652 75.1	3.75	1.50
E-newspapers/magazines	27 3.1	95 11.0	157 18.1	589 67.8	3.58	.74
CD-ROM Databases	59 6.8	153 17.6	199 22.9	457 52.6	3.28	.94
E-Dictionaries	36 4.1	124 14.4	220 25.3	488 56.2	3.41	.83
Theses/Dissertations	75 8.6	135 15.6	175 20.2	483 55.6	3.29	.98
Tutorials	87 10.0	148 17.0	215 24.8	418 48.2	3.17	1.01
Maps	64 7.4	121 14.0	241 27.7	442 50.9	3.28	.92
Conference papers/ monographs	65 7.5	131 15.1	190 21.9	482 55.5	3.28	.96
Video cassette	56 6.5	166 19.2	242 27.9	404 46.5	3.16	.94
Audio cassette	61 7.0	158 18.2	251 28.9	398 45.9	3.15	.94
Computer Software	43 5.0	134 15.4	244 28.1	447 51.5	3.28	.88
Blog	78 9.0	151 17.3	227 26.2	412 47.5	3.14	.99
Presentation slides	41 4.7	121 13.9	255 29.4	451 52.0	3.36	1.64
Online forum	51 5.9	14 16.9	257 29.6	413 47.6	3.21	.91
Qualitative data/Online interviews	82 9.4	166 19.1	274 31.6	346 39.9	3.04	.98

The key for the table:
1. NVA = Not Very Aware   2. NA = Not Aware   3. FA = Fairly Aware   4. VA = Very Aware

Table 4.6 showed the level of knowledge of digitalized databases among the respondents; a test norm was constructed for awareness of e-resources of researchers' scale. A score of 1-39 implied low awareness of e-resources, 40-79 represented moderate awareness of e-resources and 80-116, high awareness of e-resources. Since the overall mean score of awareness of e-resources by the respondents was $\overline{x}$ = 89.35, SD=18.90 and this fell within the interval 80-116. Therefore, one can deduce that the respondents had high level of awareness of e-resources in NARIs in Nigeria. In addition, the major e-resources that the respondents were aware of were: Access to global on line research in agriculture (AGORA), e- books, encyclopedia, the Internet, electronic mail, e-newspaper/magazines, e-dictionaries, e-theses/ dissertations, CD-ROM, presentation slides, conference reports and monographs. Among the e-resources the respondents had low awareness for are AGRIS, Science Direct, EBSCOHOST and JSTOR

4.4.4   Research question 4: What is the frequency of the use of e-resources among researchers in NARIs?

To determine the frequency of the use of e-resources among researchers in NARIs, the opinion expressed by each respondent, the type of e-resources used and the frequency which could be daily, weekly, monthly, and annually can be observed from Table 4.7

Table 4.7 shows the types and frequency of use of e-resources by respondents.

Table 4.7: Types and frequency of use of e-resources by respondents

Electronic Resources	Daily N %	Weekly N %	Monthly N %	Quarterly N %	Annually N %	Mean	Std. Dev
Online Databases e.g. AGORA etc.	117 13.5	262 30.1	216 24.9	183 21.1	90 10.4	2.89	0.22
Electronic Journals (E-Journal)	222 25.6	250 28.8	247 28.4	98 11.3	51 5.9	2.44	0.57
Electronic Books	167 19.2	245 28.2	231 26.6	122 14.1	105 11.9	2.71	0.45
Online Catalogue	88 10.1	164 18.9	173 19.9	263 30.4	180 20.7	3.2	0.31
Encyclopaedia	166 19.1	195 22.5	145 16.7	220 25.3	142 16.4	2.89	0.39
Internet	660 76.0	106 12.2	32 3.7	25 2.9	45 5.2	3.50	0.32
Electronic mail	627 72.2	122 14.1	52 6.0	22 2.5	45 5.2	3.58	0.29
www	578 66.6	116 13.4	67 7.7	58 6.7	49 5.6	1.76	0.22
E-newspapers/magazines	476 54.8	204 23.5	76 8.8	60 6.9	52 6.0	1.96	0.43
CD-ROM Databases	154 17.7	144 16.6	172 19.8	282 32.5	116 13.4	2.91	0.36
E-Dictionaries	376 43.3	177 20.4	138 15.9	104 12.0	73 8.4	2.39	0.33
Data archive	134 15.4	159 18.3	177 20.4	289 33.3	109 12.6	2.92	0.32
Theses/Dissertations	115 13.2	178 20.5	195 22.5	270 31.1	110 12.7	2.95	0.27
Tutorials	87 10.0	165 19.0	332 38.3	157 18.1	127 14.6	3.09	0.26
Maps	97 11.2	148 17.1	193 22.2	296 34.1	134 15.4	3.11	0.29
Conference papers/ monographs	148 17.1	160 18.4	315 36.3	144 16.6	101 11.6	2.85	0.30
Microfilm reel	63 7.3	74 8.5	157 18.1	149 17.2	425 48.9	3.61	0.30
Microfiche	67 7.7	66 7.6	125 14.4	147 16.9	463 53.4	3.68	0.34
Video cassette	113 13.0	134 15.4	136 15.7	293 33.8	192 22.1	3.19	0.45
Audio cassette	145 16.7	125 14.4	148 17.1	96 11.1	353 40.7	3.09	0.69
Computer Software	351 40.4	159 18.3	161 18.5	98 11.3	99 11.4	2.56	0.38
Blog	178 20.5	302 34.8	162 18.7	115 13.2	111 12.8	2.76	0.39
Presentation slides	133 15.3	183 21.1	340 39.1	133 15.3	79 9.1	2.79	0.22
Online forum	292 33.7	145 16.7	183 21.1	133 15.3	115 13.2	2.86	0.35
Qualitative data/Online interviews	93 10.7	106 12.2	319 36.8	167 19.2	183 21.1	3.36	0.50

The Key for the table:

(a) Daily(5)   (b) Weekly (4)   (c) Monthly (3)   (d) Quarterly (2)   (e)Annually (1)

The e-resources that were frequently used by the respondents were the Internet, e-mail microfilm reel, microfiche, video cassette, audio cassette, qualitative data/ online interviews, maps, online catalogues, tutorials, data archives, online databases e.g. AGORA and conference papers/monographs. The test norm for the scale of deployment of information in digital forms for those who answered the questionnaire was a score of 1-39 which indicated low use of e-resources, 40-79 moderate use of e-resources and 80-116 high use of e-resources. Since the overall mean score of use of e-resources of the respondents were (X=70.51, SD=21.8) and fell within the interval of 40-79, one can conclude that the respondents had moderate use of e-resources in NARIs.

4.4.5 Research Question 5: What is the relative contribution of self-management, awareness and use of e- resources to the scholarly publication output of researchers in NARIs?

Table 4.8 presents the result for the relative contribution of self-management, awareness and use of e-resources to scholarly publication output of respondents..

Table 4.8: Relative contribution of self-management, awareness and use of e-resources to scholarly publication output of respondents.

Variables	Unstandardised Regression Coefficients		Standardised Regression Coefficients	T	Sig.P
	B	Std. Error (B)	Beta		
1 (Constant) (Bo)	25.771	4.988		5.167	0.000
Awareness of (AER) e-resources-	0.103	0.037	0.107	2.793	0.005
Self-management (SM)	0.108	0.029	0.137	3.724	0.003
Use of e-resources (UER)	.118	0.030	0.223	3.933	0.001

a. Dependent Variable: Scholarly publication output

Table 4.8 is about relative contribution of self-management, awareness and use of e-resources to scholarly publication out-put of the respondents. Table 4.8 showed that awareness of e-resources (B=0.103, t=2.793, P<0.05), use of E-resources (B=0.118, t=3.933 P<0.05) and self-management (B=0.108, t=3.724, P<0.05) individually had significant relative contribution to scholarly publication output of the respondents.

The essence of determining the relative contribution of the three variables is to know which of the independent variables produced the most relative contribution to scholarly publication output of the respondents. The result showed that awareness of e-resources had the relative contribution of (Beta = .107, (10.7%). The use of e-resources with (Beta = 0.223), 22.3% while self-management had relative contribution (Beta = .137), 13.7% to scholarly publication output of the respondents. The result generally showed that two out of the independent variables (awareness of e-resources and use of e-resources) have the capacity to determine the agricultural researchers' scholarly publication output except that the gravity of and the extent of the effects/capacities differs. The self-management has capacity to contribute to scholarly publication output of the respondents but very low.

4.5   Test of Hypotheses
This section discusses the eight hypotheses tested.

4.5.1   Hypothesis 1 (Ho1); There is no significant relationship between scholarly publication output and self-management among researchers in agricultural research institute in Nigeria.

Table 4.9 reveals the test of significant relationship between scholarly publication output and self-management of the respondents is presented in table 4.9

Table 4.9: Test of significant relationship between scholarly publication output and self-management of the respondents

Variables	No	Mean	SD	r	Sig. P.
Scholarly Publication Output	868	30.5	18.10	0.496	0.002
Self-management	868	44.76	6.20		

Table 4.9 showed the test of significant relationship between scholarly publication output of researchers in National agricultural research institutes and their self-management. The result shows that there was a significant relationship between scholarly publication output of researchers in National agricultural research institutes and their self-management ($r=0.496$; $P<0.05$). Hence, this showed that the finding is not consistent with the stated null hypothesis. It can be concluded therefore that self-management had positive association with scholarly publication output of researchers in NARIs; hence the hypothesis is rejected.

4.5.2 Hypothesis 2 (Ho2): There is no significant relationship between scholarly publication output and awareness of e-resources among researchers in NARIs.

Table 4.10 reveals the test of significant relationship between scholarly publication output and awareness of e-resources of the respondents is presented in table 4.10

Table 4.10: Test of significant relationship between scholarly publication output and awareness of e-resources of the respondents

Variables	No	Mean	SD	r	Sig. P.
Scholarly Publication Output	868	30.54	18.1		
Awareness of E-resource	868	89.35	18.9	0.370	0.003

Table 4.10 showed the data on the two variables that their significant relationship is being tested. The variables are scholarly publication output and awareness of e-resources. Hypothesis 2 states that there is no significant relationship between scholarly publication output and awareness of e-resources among researchers in NARIs. The response to this hypothesis is provided in Table 4.10. It can be deduced from the table that there was significant relationship between scholarly publication output of researchers in National agricultural research institutes and their awareness of e-resources r=0.370; P<0.05. Therefore, the finding is not consistent with the stated null hypothesis. It therefore implies that awareness of e-resources had positive association with scholarly publication output among researchers in NARIs, hence the hypothesis is rejected.

4.5.3 Hypothesis 3 (Ho3): There is no significant relationship between scholarly publication output and use of e-resources among researchers in NARIs.

Table 4.11 reveals the test of significant relationship between scholarly publication output and the use of e-resources by the respondents

Table 4.11: Test of significant relationship between scholarly publication output and the use of e-resources by the respondents

Variables	No	Mean	SD	r	Sig. P.
Scholarly Publication Outputs	868	30.54	18.1		
Use of E-resources	868	70.51	21.8	0.81	.006

Hypothesis 3 states that there is no significant relationship between scholarly publication output and use of e-resources among researchers in NARIs.

Table 4.11 showed the relationship between scholarly publications output and use of e-resources of the researchers in NARIs. Table 4.11 shows that there is a significant relationship between scholarly publication output of researchers in National agricultural institutes and their use of e-resources (r=0.81 and P<0.05).It can therefore be confirmed that the finding is not consistent with the stated null hypothesis. It can be concluded therefore that use of e-resources positively associates with the scholarly publication output, therefore the hypothesis is rejected.

4.5.4 Hypothesis 4 (Ho4): There is no significant relationship between self-management and awareness of e-resources among researchers in National agricultural research institutes.

Table 4.12 reveals the test of significant relationship between self-management and awareness of e-resources of the respondents

Table 4.12: Test of significant relationship between self-management and awareness of e-resources of the respondents

Variables	No	Mean	SD	r	Sig. P
Self-management	868	44.76	6.20		
Awareness of E-resources	868	89.35	21.8	0.36	008

Hypothesis 4 for the study states that there is no significant relationship between self-management and awareness of e-resources among researchers in National agricultural research institutes. To address the issue raised in hypothesis 4 of this study, reference was made to Table 4.12 which showed the data to decide the significant relationship between self-management and awareness of e-resources of the respondents. From Table 4.12, it can be inferred that there was a significant relationship between self-management of researchers in National agricultural research institutes and their awareness of e-resources (r=0.36 and P<0.05). The interpretation of this is that the two variables namely: self-management and awareness of e-resources have a strong tendency to vary together. The finding is not consistent with the stated null hypothesis. It therefore implies that self-management positively associates with the awareness of e-resources among the respondents; therefore, the hypothesis is rejected.

4.5.5 Hypothesis 5 (Ho5): There is no significant relationship between awareness of e-resources and the use of e-resources among researchers in National agricultural research institutes.

Table 4.13 reveals the test of significant relationship between awareness of e-resources and the use of e-resources by the respondents

Table 4.13: Test of significant relationship between awareness of e-resources and the use of e-resources by the respondents

Variables	No	Mean	SD	r	Sig P
Awareness of E-resources	868	89.35	18.9		
Use of E-resources	868	70.50	21.8	0.44	0.004

The fifth hypothesis formulated for the study states that there is no significant relationship between awareness and use of e-resources and researchers in National agricultural research institute. The data in Table 4.13 was examined because it showed the test of significant relationship between awareness of e-resources and use of e-resources among the respondents. The interpretation revealed that there was a significant relationship between awareness of e-resources of researchers in National agricultural research institutes in Nigeria and their use of e-resources ($r=0.44$ and $P < 0.05$). Therefore, it can be confirmed that the finding is not consistent with the stated null hypothesis. This therefore implies that awareness of e-resources has positive association with the deployment of information in digital formats by the respondents, hence the hypothesis is rejected.

4.5.6 Hypothesis 6 (Ho6): There is no significant relationship between self-management and use of electronic resources among researchers in National agricultural institutes in Nigeria.

Table 4.14 reveals the test of significant of relationship between self-management and use of e-resources

Table 4.14: Test of significant of relationship between self-management and use of e-resources

	No	$\overline{X}$	R	Sig P.
Self Management	868	44.76	0.36	0.008
Use of e-resources	868	70.51		

As regard to hypothesis 6 which states that there is no significant relationship between self-management and use of electronic resources among researchers in National agricultural research institutes in Nigeria. To examine this hypothesis reference was made to Table 4.14 which showed the test of significant of relationship between self-management and use of e-resources and from Table 4.14 it can be deduced that there was a significant relationship between self-management and use of e-resources among researchers in NARIs. This is because (r = 0.36 and P < 0.05). The interpretation that can be given to this is that the two variables: self-management and use of e-resources have the tendency to vary together. Hence, self-management positively relate with deployment of information in digital formats among researchers in NARIs. Therefore, the hypothesis is rejected.

4.5.7 Hypothesis 7 (Ho7): Self-management, awareness of e-resources and use of e-resources will not significantly relate to scholarly publication output among researchers in NARIs.

Table 4.15 reveals the ANOVA[b] summary of multiple regression analysis showing relations of self-management, awareness of electronic resources and use of electronic resources with scholarly publication output of the respondents.

Table 4.15: ANOVA[b] summary of multiple regression analysis showing relations of self-management, awareness of electronic resources and use of electronic resources with scholarly publication output of the respondents

Model	R	R-Square	Adjusted R Square	Standard Error of the Estimate (SEE)
1	0.7169	.516	.514	18.38045

Model		Sum of Squares	Df	Mean Square	F	Sig. P
1	Regression	4240.012	3	1413.337	4.183	.006[a]
	Residual	291894.527	864	337.841		
	Total	296134.539	867			

a. Predictors: (Constant), use of e-resources, self-management score, awareness of e-resources

b. Dependent Variable: scholarly publication output

c. Predictors: (Constant), Use of e--resources, self-management score, awareness of e-resources

d. Predictors: (Constant), Use of e-resources, self-management score, awareness of e-resources

A stepwise multiple regression analysis on the data obtained on independent variables and dependent variable was run in Table 4.15 and this showed that the entire independent variables made 51.4% prediction of the scholarly publication output. From the analysis of variance performed on the multiple regression, it was seen that the observed (F value =4.183, df=3; 0.64, P<.00) when the three variables were regressed with the scholarly publication. These results indicated that the three independent variables (self-management, awareness of e-resources and use of e-resources) jointly (as indicated by the R-square value) explained or predicted 51.4% of the variation in agricultural researchers' scholarly publication output. In addition, the self-management awareness of e-resources and use of e-resources had significant multiple relationship with the scholarly output of the respondents (R=0.7169, P<0.05).

4.5.8 Hypothesis 8 (Ho8); There is no significant difference in scholarly publication output, self-management, awareness and use of electronic according to researchers' workplace in NARIs.

Table 4.16 reveals the Mean and standard deviations of the variables of the study by workplace of the respondents

Table 4.16 : Mean and standard deviations of the variables of the study by workplace of the respondents

NARIs	SPO		SM		AER		UER	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CRIN	3.00	0.05	2.42	0.04	3.69	0.62	3.00	0.38
IAR&T	3.00	0.83	2.50	0.04	3.53	0.82	2.72	0.15
NIHORT	2.83	0.76	2.39	0.06	3.55	0.63	2.59	0.20
NIOMR	3.50	0.52	2.13	0.98	3.70	0.79	3.00	0.04
NSPRI	3.30	0.65	2.38	0.08	3.17	0.93	3.10	0.25
NCRI	2.66	0.91	2.51	0.03	3.38	0.85	2.78	0.22
NVRI	3.07	0.27	1.77	0.98	2.35	0.91	2.62	0.96
NIFFR	2.53	0.92	2.32	0.94	2.31	0.93	3.30	0.09
NEARLS	3.50	0.86	2.73	0.89	3.30	0.78	2.92	0.98
IAR	3.10	0.77	2.09	0.07	3.82	0.37	2.89	0.47
RRIN	2.75	0.04	2.49	0.87	2.84	0.09	2.70	0.33
NIFOR	2.00	0.82	2.19	0.20	2.48	0.71	2.71	0.08
LCRI	3.13	0.35	2.12	0.01	2.60	0.08	2.95	0.40
NRCRI	2.83	0.31	2.57	0.12	2.70	0.02	3.07	0.37
NAPRI	2.06	0.10	2.71	0.16	2.43	0.96	3.15	0.02

The Key for the table:

1. SPO =   Scholarly publication output   3. AER   = Awareness of electronic resources

2. SM=   Self-management   4. UER   = Use of electronic resources

Table 4.16 presents the mean and standard deviation scores of scholarly publication output, self-management, awareness of e-resources and use of e-resources by the respondents and by workplace (National Agricultural Research Institutes in Nigeria) of the respondents. NIOMR, the $\overline{x}$=3.50, SD=0.0.52); NSPRI the $\overline{x}$=3.30, SD=0.65; LCRI the $\overline{x}$=3.13, SD=0.35 and with the $\overline{x}$=3.10, SD=0.77 had higher mean scores of scholarly publication output (SPO) than their counterparts in other National agricultural research institutes. The researchers in NIFOR with $\overline{x}$=2.00, SD=0.82 and NAPRI with $\overline{x}$=2.06, SD=-0.10 had the least mean scores of scholarly publication output.

As regards the self-management of the respondents, it can be observed from Table 4.5.8 that researchers from IAR&T had $\overline{x}$=2.50, SD=0.04: NCRI had $\overline{x}$=2.51, SD=0.03: NEARLS had $\overline{x}$=2.72, SD=0.89: NRCRI had $\overline{x}$=2.75, SD=0.12 and NAPRI with $\overline{x}$=2.71, SD=0.16 had higher mean score of self-management practices than their counterparts in other National agricultural research institutes in Nigeria. It can be noted also from table 4.6 that researchers from IAR had $\overline{x}$=2.09, SD=0.07: NVRI with $\overline{x}$=1.77, SD=0.98 and LCRI with $\overline{x}$=2.12, SD=0.01 had the least mean score of self-management features.

The respondents/researchers in IAR, had $\overline{x}$=3.82, SD=0.37, NIOMR had $\overline{x}$=3.70, SD=0.79) CRIN $\overline{x}$=3.69, SD=0.62, NIHORT $\overline{x}$=3.55, SD=0.63 and IAR&T with $\overline{x}$=3.53, SD=0.82, these institutes had higher mean score of awareness of e-resources than their colleagues in other NARIs. The researchers in NIFFR's $\overline{x}$=2.31, SD=0.93 and NVRI with $\overline{x}$=2.35, SD=-0.91 had the least mean score of awareness of e-resources.

Concerning the use of e-resources, the respondents/researchers in NIFFR had $\overline{x}$=3.30, SD=0.09, NAPRI's $\overline{x}$=3.15, SD=0.02, NSPRI had $\overline{x}$=3.10, SD=0.25 and NRCRI with $\overline{x}$=3.07, SD=0.37 had higher mean score in their use of e-resources than their counterparts in other NARIs. Nevertheless, the researchers/respondents in NVRI had $\overline{x}$=2.62, SD=0.96 and NIHORT with $\overline{x}$=2.59, SD=0.20 had the least mean scores in their use of e-resources.

Table 4.17 shows One-way ANOVA showing test of significant difference in scholarly publication output, self-management, awareness and use of e-resources of the respondents and by the workplace

Table 4.17: One-way ANOVA showing test of significant difference in scholarly publication output, self-management, awareness and use of e-resources of the respondents and by the workplace

VARIABLES		Sum of Squares	Df	Mean Square	F	Sig.p
RESEARCH PRODUCTIVITY (SPO)	Between Groups	23.123	13	1.779	1.903	.029
	Within Groups	295.365	316	.935		
	Total	318.488	329			
SELF-MANAGEMENT(SM)	Between Groups	48.190	13	3.707	3.402	.000
	Within Groups	879.374	807	1.090		
	Total	927.564	820			
AWARENESS OF E-RESOURCES(AER)	Between Groups	183.629	13	14.125	20.255	.000
	Within Groups	556.512	798	.697		
	Total	740.142	811			
USE OF E-RESOURCES(UER)	Between Groups	27.077	13	2.083	1.382	.162
	Within Groups	1139.403	756	1.507		
	Total	1166.479	769			

Table 4.17 presents the result of test of significant difference in scholarly publication output, self-management, awareness and use of electronic resources by the respondents and by their workplace. One can infer that there was a significant difference in scholarly publication output of the respondents by their workplace (F=1.903, df=13,316, P<0.05). Furthermore, data analysis revealed that respondents in National Institute for Oceanography and Marine Research, National Extension and Research Liaison Services, Nigerian Stored Products Research Institute, and Lake Chad Research Institute had more scholarly publication output than their counterparts in other NARIs.

Similarly, one can deduce that there is a significant difference in self-management of the respondents (f=3.402, df=13; 316, P<0.05). Furthermore, data analysis showed that respondents in National Animal Production Research Institute, National Extension and Research Liaison Services, Institute for Agricultural Research and Training and National Root Crops Research Institute had higher self-management compared to other respondents. Also there was a significant difference in awareness of e-resources of the respondents based on their workplace (f=20.255, df=13.798, P<0.05). Also, data analysis showed that respondents in Institute of Agricultural Research, National Institute for Oceanography and Marine Research, Cocoa Research Institute of Nigeria, National Institute for Horticultural Research, and Institute of Agricultural Research and Training had more awareness of e-resources than their colleagues in other NARIs. It was obviously seen that there was no significant difference in the use of e-resources by respondents according to their places of work. This means that all the respondents in NARIs demonstrate some level of use of e-resources.

Table 4.18presents the Turkey HSD POST-HOC test analysis of self management, awareness of e-resources, use of e-resources and scholarly publication output of the respondents

Table 4.18 TURKEY HSD POST-HOC TEST ANALYSIS OF SELF MANAGEMENT, AWARENESS OF E-RESOURCES, USE OF E-RESOURCES AND SCHOLARLY PUBLICATION OUTPUT OF THE RESPONDENTS
*The mean difference is significant at the .05 level

Variable categories	Mean Difference	Std Error	Sig. P	95% Confidence Interval	
				Lower Bound	Upper Bound
Scholarly Publication Self-Management	30.54 44.76	.0661 .0872	.000 .247	-.4470 .3456	-.1257 .0661
Scholarly Publication Awareness of E-resources	30.54 89.35	.0661 .0872	.000 .247	.1457 -.0669	.4470 .3701
Scholarly Publication Use of E-Resources	30.54 70.51	.0661 .0872	.000 .247	.0661 .3601	.3477 .0778

The results of the Turkey test could be summarises as follows:

1. Respondents with self-management had more scholarly publication than the others.

2. Respondents who were aware of e-resources had more scholarly publication than those who were not aware.

3. Respondents who used electronic resources had more scholarly publication than respondents who did   not use electronic resources.

4.6   Discussion of findings

This section discussed the findings of the   study and the findings were related with previous studies.

4.6.1   Scholarly publication output of researchers

The primary challenge of this study was to get researchers in National agricultural research institutes to improve their scholarly publication output and the study wishes to confirm or otherwise if self- management among the researchers, awareness and use of e-resources can relate together or independently to improve scholarly publication output of researchers in National agricultural research institutes in Nigeria. It can be observed from the analysis of the data collected from the study that researchers in National Agricultural Research Institutes in Nigeria had scholarly publication output that is moderate from 2009-2016. The development is good. Among the factors that could be attributed to the level   of scholarly publication output of the researchers from 2009-2016 in NARIs were possession of high self-management skills, high level of awareness and moderate use of e-resources by the researchers. The study revealed that there was significant relationship between each of the independent variables and scholarly publication output of researchers in NARIs.

It equally established that there was correlation between self-management, awareness and deployment of information in digital formats on scholarly publication output among the researchers in NARIs. Though the three independent variables are related but it could be noted from the findings of the study that their impact on the dependent variable which is scholarly publication output differ. The impact of awareness was the highest, followed by the use of e-resources and self- management had the least impact from the finding of the study. For example, Tiemo (2016) confirmed how electronic resources enhanced research in recent times. According to Tiemo:

> in recent years, advancement in technologies has drastically changed ways which information services are rendered in libraries and organisations. Libraries are being automated and connected to the Internet in order to facilitate the process of retrieving and disseminating information that will enhance teaching, learning, research and administrative work.
> The Internet has made it possible for libraries, research institutes and organisations to have access to electronic information resources databases containing e-journals, books, seminar and conference paper for users to use irrespective of their geographical location. The Electronic Information Resources (EIR) databases make it easy for scholar to have full access to information needed for research work at ease.   (p56)

Similarly, Okon, Patrick and Bosire. (2014) established that increased use of electronic information resources by academic staff in selected Nigerian universities determined the increase in scholarly publication output. The authors reported that there was a significant positive correlation between the use of electronic resources and productivity, that is, the scholarly publication output of scholars in the surveyed Nigerian universities. Palvalin, Vordit and Jylha (2017) also confirmed the impact of workplace and self-management practices on the productivity of knowledge of workers. The authors noted that self-management practices was a contributing factor to the quality and quantity of individual employee output and in the quality of team work that can be obtained among employees in a workplace, particularly in the area of communication and concentration.

The view expressed by Palvalin, Vordit and Jylha (2017) further justified the reasons why there was increase in scholarly publication output of researchers between 2009-2016. This study revealed that there were high practices of self-management features among researchers in NARIs. Since it is expected that high practices of self-management features among the respondents will reflect in the quality and quantity of scholarly publication output that is expected from researchers who are respondents for this study, hence, it will be justifiable to establish that the high presence of self-management practices among researchers in NARIs could have contributed to high awareness, and use of e-resources among the researchers which consequently resulted in increase in productivity which manifested in their increased scholarly publication output between 2009-2016.

It can be observed that journal is most preferred by researchers either to publish their research findings or to consult even when searching for information for research. The findings in this study which showed that the respondents' scholarly publication output is high in journals than books, chapter in books, and conference proceedings were very much in line with many research findings that have been conducted. For example, Michael and Vuda (2013) explained that journal articles are generally given greater preference and merit within scientific community, when compared with other forms of disseminating research findings. Michael and Suarez (2018) revealed that journal articles are used highly by researchers because information in journal articles are more accessible than other medium of disseminating scholarly publication.

4.6.2   High level of self- management skills among researchers in NARIs

Among the findings in this study was that self-management of researchers in NARIs was high. This finding is commendable because the implication of this is that researchers in National agricultural research institutes in Nigeria are determined to be productive because self-management practices among employees were revealed to be synonymous to increase productivity of workers. Daniel (2011) observes:

> The development of self-management skills is one of the management best practices for those people who have decided to become productive employees. {p.2}

Findings from this study showed that researchers in NARIs had high practices of features that are related to self-management like, good communication, self-motivation and determination. The respondents indicated that they like to put in their best effort when performing their duties. The respondents also responded to the questionnaire that they motivate themselves. According to Daniel (2011), "self-management skills are those abilities that allow an employee to feel more productive when doing daily routine regardless of the working environment. Well-developed self-management skills will keep you efficiently to communicate with co-workers, management and customers, make right decisions, plan your working time and keep your body healthy". The increase in productivity of the scholarly publication output of researchers is a product of high self-management practices which manifested in their possession of good team work spirit which strengthened collaboration, good communication among co-researchers and management.

Findings from the study conducted by Miikka (2017) on the impact of workplaces and self-management practices on the productivity of knowledge in workers showed that self-management practices had a larger impact on quality and quantity of individual output and the quality and quantity of the team output on communication and concentration. This finding further supported the need for researchers who desire both quality and quantity output like scholarly publication output either individually or as team to reinforce their self-management features to enhance their productivity at work. The self-management is expected to manifest in how they control themselves to use available resources to engage in good and relevant research work in accordance to the mandate of their institutes and highly acceptable scholarly publication output.

Brubaker (2017) also relates attainment of success in a task in a workplace to quality of self-management features that exists in the employee. Brubaker (2017) explained how self-management influences quality and quantity of job output, he said emotions will have a better

outcome for success if well managed and the author explained that the process to manage it is to have a high self –management skill.

The researchers in NARIs who were respondents in this study had high self-management features because many of them indicated that; they learnt from their mistakes so that they would do things better in future when they do something right they take time to enjoy the feeling and when they fail at something they are still able to feel good about themselves. These features have ability to enhance the productivity of researchers and make them to conduct quality research and good scholarly publication output. The increase in scholarly publication output by researchers in NARIs between 2009 to 2016 can be attributed to high self-management features which manifested among researchers because according to Brubaker (2017) "people with high degree of self-management are able to use the awareness of their emotions to guide and direct their actions and behaviours towards positive outcomes".

Self-management approach to job performance is good in a research organisation because the goal of the organisation is to solve a problem through scientific research approach. The management of the research institutes is expected to set the overall direction of research projects or tasks and researchers are expected to implement the details with minimal oversight but through self-reinforcement and which will lead to achievement of set goal.

4.6.3 High perception of information in digital formats among knowledge investigators in NARIs

The findings from the study showed that there was high perception of information in digital formats by researchers working at NARIs. It is a good development and this could be one of the factors that contributed to increase in scholarly publication of researchers between 2009- 2016 as against what was obtainable before 2009. It has been established from related studies that awareness of technology stimulates its use and that awareness of e-resources enhances their use and consequently awareness contributes to enhancement of research and scholarly publication output of researchers. Similarly, low awareness of a technology has been also confirmed as a factor that contributes to low use of the technology, studies have also confirmed that low awareness of e-resources among researchers is a contributing factor to poor scholarly publication output of researchers. Similarly, Prangya and Rabindra (2013) said knowledge is vital to usage of digitalized databases. Awareness of information in digital formats by researchers who were respondents in this study indicated that researchers had

knowledge of them and having knowledge of them made them to appreciate their importance and consequently these might have influenced the use of e-resources by the researchers to achieve their desired objectives.

Attama (2013), in a study conducted on assessment of influence of library resources on book publication by academic staff of some institutions in South–South and South–East geopolitical zones of Nigeria, associated low level of scholarly publication output among academic staff to low awareness which consequently led to non-use of library resources which included both electronic resources and print resources. Attama (2013) also added that awareness which aided the use of electronic information resources like online resources and CD-ROM databases contributed to influencing journal article publications in both local and international professional journals by academic staff.

Dubickic (2009) further strengthened the importance of awareness of electronic resources among researchers. He advocated for increased awareness about the research information resources to enhance research and its products.

4.6.4 Moderate level of use of e-resources by researchers in NARIs

This finding is not good for enhancement of research and scholarly publication output of the researchers. Since the awareness was high, it was expected that the use of e-resources among the respondents will be more than moderate but high too.

Generally, it can be observed that respondents from the studies like Dongardive (2015), Abubakar and Akor (2017), Metga, Dulle, Malekanni and Chailla (2014), Egberongbe (2011) and Munusammy (2017) on the use of e-resources showed that respondents used the electronic resources highly. This is contrary to the finding in this study where respondents were discovered to have used the e-resources moderately despite the fact that respondents had high awareness of e-resources and high self-management features. In different studies where respondents acknowledged that they used e-resources highly to support their research work positively some factors were highlighted as promoters of the use of e-resources while some were also listed as hindrances to the deployment of information in digital formats. Prominent among the factors indicated that supports use of e-resources were: availability of enough computer terminals for those who patronize the information in digital formats, acquisition of necessary skills for easy navigation of the databases, provision for printing of needed information, adequate bandwidth to support availability of network for the Internet, personal interest of researcher to use the database and continuous awareness

programme to sensitise the researchers on the advantages of information in digital formats that are available in the library of the institutes.

On the other side, some problems were also recorded as hindrances to the use of e-resources in some of the studies examined. Prominent among the problems that affected the use of e-resources by researchers include: lack or low awareness of e-resources by researchers, no enough computer terminals in the library for the use of researchers, lack of assistance from library staff to guide the researchers in the use of electronic databases, workload of scholars did not allow for time to use the e-resources, low internet speed due to poor network or low bandwidth, frequent power cut without standby generator to boost electricity, lack of knowledge or skill to use the electronic resources by researchers. Others were, dissatisfaction with the quality of information available on database or irrelevance of the database to information needs of the researchers and non-payment of subscription fees to sustain the use of the databases by the institution

The identified factors that can hinder frequent use of e-resources by researchers may have contributed to why the deployment of information in digital formats among researchers who were respondents in this study was moderate instead of being high despite the fact that awareness was high among the respondents and self-management which stimulates desire for high productivity was equally high. It is certain however that e-resources is becoming popular among researchers due to several advantages that are derivable from them. Prominent among the advantages is that e-resources efficiently contribute to information needs of researchers and this consequently contributes positively to research and scholarly publication output of researchers.

4.6.5 Relative correlation among self-management, awareness and use of e-resources to scholarly publication output of respondents

The findings from the analysis of the data collected from researchers in all NARIs showed that awareness of e-resources had the greatest impact on enhancement of scholarly publication output of researchers in NARIs. After awareness of e-resources, other independent variables like use of e-resources and self-management in that order were found to have contributed to scholarly publication of the researchers. The findings showed that the three independent variables jointly contributed to scholarly publication output. Awareness of e-resource had the highest impact, followed by the use of e-resource and self-management.

This finding is quite in line with the processes that promote the use of a new technology among target users to enhance productivity among workforce in an organisation.

Awareness improves consciousness and guides behaviour. Awareness is important in the use of any technology. On many occasions creating awareness involve knowledgeable and skilful personnel, media and money to bring about the needed change in the target audience. According to Ani and Ahiauzu (2008), the awareness of technological application to information delivery in libraries will result in the attitudes and perceptions which will ultimately translate into the use of application as learning tools. Asefeh and Nosrat (2007) also confirmed that when users are aware of one helpful resource, it will usually lead to greater use of that information resources.

In confirmation of correlation that exists between awareness and use of technology, when awareness is well created for a product according to Hannelore, Ruben, Tammy and Leven (2015), the following can be achieved; motivation of target user to want to see the product, think of the product when they need it to solve a problem or achieve a goal, use it to meet their needs, create good reputation for it in their mind and bring it to the knowledge of colleagues. Similarly, the users will not count it as a waste of time or money to receive training that will make them acquire skills so that the users can maximise the benefits of the products.

Maharana, Seth and Behera (2010) in their study conducted on deployment of the Internet and databases by students of business management at Sambalpur University, India, the researchers confirmed that in recent years the Internet and other electronic resources have become the most popular source of information for the researchers, , teachers, professionals and students. The finding from the study showed that more than 1/3 of the respondents have four years of experience of awareness and use of the Internet and more than half of the 91 respondents surveyed in the study expressed that the knowledge and exposure they had in their disciplines would have been much limited if they did not use the Internet and electronic databases. The Internet was one of the e-resources that was identified in this study that was frequently used by researchers who were respondents in this study. This further confirmed the view expressed by Maharana, Seth and Behera (2010) who said:

Internet has become the most popular medium of communication and the basis for personal, economic and political advancement in the present society. It is an efficient tool for finding latest news, events, browse library catalogue, indexes, abstracts, exchange of information with colleagues and intellectuals with experts, join in lively debates of financial or business transactions instantly. Internet has brought people beyond telephone, fax and isolated computers to a burgeoning networked information frontier. The Internet is being used skilfully to shrink the world and bring information, expertise and knowledge straight to the desktop. (p.1)

Self-management according to Suess (2015) is a fundamental requirement for empowering both people and organisational success in the knowledge economy. Similarly, Cowbell in his theory of social cognitive theory emphasised personal discipline of an employee as important to efficient performance at a task. Self-management is referred to as a combination of behaviour that focuses on how people manage themselves in their work and their life. Kelly (1998) highlights the following key element in self-management:

It helps to make commitment to lifelong learning in support of both the organisation's goals and personal goals. It helps individual to be certain that his projects add value to the organisation (p.13).

Self-management skill supports individual to strive to develop personal productivity abilities to manage both his time and commitments. It also stimulates in individual the desire to build broad personal network to top expertise in and out of the organisation for complex problems. It also creates environment for willingness of mind to embrace change. It similarly develops in individual intrinsic motivation which is established in one of the theories that anchor this study, the achievement motivation theory, that intrinsic motivation enhances the desire to succeed in a task and productivity of an employee. Research processes have different stages and they also require some important elements before scholarly publication output emerge as a product of research. A researcher who desires to have scholarly publication output acceptable in world renowned journals in agriculture must have self-management features. It is from these elements that he can derive the inner drive to manage his time, plan his work, collaborate, get awareness to source for the information he requires to access and use them together with other equipment to efficiently conduct his research and produce quality scholarly publication output that will be acceptable internationally.

The principles of self-management which were highlighted by Sunrise, revealed that for an organisation to become self-managed according to Sunrise they must think along this line:

> authority should be distributed on expertise and competence, not in position or status. The skills of management and leadership should be shared across the entire organisation. Information required for learning and doing the work should be easily accessible and transparent.
> The most valuable resources to the organisation are customers, shareholders, employees and anyone else affecting the organisation. It is never one group becoming more important than another. (p.20)

The self-management approach is not an officially established procedure in NARIs. Each institute still operates the bureaucratic system that exists in the civil service. Though, it is not impossible that some Chief Executives in NARIs who desire prompt and quality result on an issue may occasionally set aside the bureaucratic approach, instead, they give assignments out to staff they believe has the ability to do a particular work without giving recognition to status or rank in the system. Such opportunities do give some staff chance to freely use their initiatives. In organisational set up that give prominences to staff productivity like it is expected among agricultural research institutes in Nigeria where employees require constant learning, creativity and other intellectual work, self-management can be a very effective management tool.

It is indicative from Sunrise's submission that self-management is best for NARIs for maximum productivity of researchers which is expected to manifest in their quality of research and scholarly publication output. Though, it is possible that self-management approach may not be suitable for all organisational set up, its application depends on what the organisation is planning to achieve and the nature of job the employees have to do. The researchers in National agricultural research institutes are expected to be employees who are creative, learning all the time, free to express their knowledge and be able to listen to others in order to gain from their submissions in an atmosphere that is free of the consciousness of cadre or rank. This situation is not absolutely present in NARIs, the institute still operates Lam directed syndrome of civil service structure which could be a limiting factor to the operation of self-management administrative style and it might have contributed to the reason why self-management has the least correlational impact among the three independent

variables in the investigation compared to the perception and use of information in digital formats.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

In this chapter, the summary of findings, conclusion and recommendations from the outcome of the analysis of data collected for the study are discussed. The chapter also contains the contributions of the study to knowledge and suggestions for further study.

5.2.   Summary of the findings

The summary is as follows:

1.   The scholarly publication output of researchers in National agricultural research institutes in Nigeria was moderate from 2009-2016.

2.   Researchers in NARIs had high self-management features.

3.   There was high knowledge of digitalized databases among researchers in NARIs. The e-resources the respondents indicated they were aware of were online databases like Access to Global Online Research in Agriculture (AGORA), the Internet, encyclopaedia, electronic mail, e-newspapers/magazines, dictionaries, CD-ROM databases, e-theses/ dissertations, presentation slides, conference papers and monographs

4.   There was moderate use of electronic information resources among researchers in NARIs. The e-resources   most frequently used by the respondents were microfilm reel, microfiche, video cassette, audio cassette, qualitative data, online interviews, maps online catalogue, tutorials and CD-ROM databases, these/dissertation, data archives, online databases like AGORA, conference papers and monographs.

5   The inter-correlation among the three independent variables (self-management, awareness of e-resources and use of e-resources) to scholarly publication output showed that awareness of e-resources had highest correlation, followed by use of e-resources Self-management also had positive correlation with scholarly publication output but low.

6.   There was significant relationship between self-management and scholarly publication output among researchers in NARIs.

7.   There was a significant relationship between awareness of e-resources and scholarly publication output among researchers in national agricultural research institutes in Nigeria.

8.	There was a significant relationship between the use of e-resources and scholarly publication output of researchers in NARIs.

9.	There was a significant relationship between self-management and awareness of e-resources among researchers in NARIs.

10.	There was a significant relationship between awareness of e-resources and the use of e-resources among researchers in National agricultural research institutes in Nigeria.

### 5.3.	Conclusion

Scholarly publication output is an important information material that is used in academic oriented institutions, like universities and research institutes to determine the level of productivity of researchers who are also referred to as academic staff. In view of the importance attached to scholarly publications among academic staff in universities and agricultural research institutes in Nigeria, this group of staff engage in conduct of research along their discipline and the national mandate of their institutes. The procedure and findings of the research they conduct are usually documented in scholarly publication output like journals, books, grey literature, technical reports etc.

It is due to the recognition attached to scholarly publication output that this study was conducted to determine some variables that can further enhance the writing of good scholarly publications among researchers in National agricultural research institute in Nigeria.

To improve writing of scholarly publications among NARIs researchers therefore, this study assumed that the following independent variables, self-management, awareness of e-resource and use of e-resources will predict scholarly publication output among researchers in NARIs. The predictability of the independent variables was tested through formulated hypothesis and research questions. The findings from the highlighted processes indicate that awareness of e-resources among researchers was high. The self-management practice of the researchers in NARIs was equally high, but the use of e-resources among NARIs, researchers was moderate.

Also the study confirmed that there is significant relationship between awareness of e-resources of researchers in NARIs and their scholarly publication output. The findings from the study also showed that there is significant relationship between level of self-management practices of researchers in NARIs and their scholarly publication output. Use of e-resources among NARIs researchers also had significant relationship with scholarly publication out. The contributions of the three independent variables to scholarly publication output show

that awareness had the highest input follow by use of e-resources. Self-management also had some input but very low. These findings are relevant for enhancement of scholarly publication output of researchers in NARIs, academic institutions in Nigeria and other Africa countries.

5.4. Recommendations

1.   Self-management and awareness of e- resources by researchers in NARIs were high. This is good for the improvement of conduct of academic investigation and report of their findings. In view of this, this study recommends that the scholarly publication output of researchers in NARIs should continue to be improved upon through sustenance of their self-management features and increased awareness of the available e-resources. Also identified factors in each institute that hinders the use of e- resources should be improve upon, so that the use of e-resources among researchers in NARIs which was established in this study as being moderate can become very high.

2.   The study also confirmed that scholarly publication output of researchers in NARIs from 2009 and 2016 was moderate and of all the scholarly publication output produced, journal publications were most prominent among NARIs' researchers. Based on this, it is recommended that researchers in NARIs' should also be encouraged to write the findings of their researches in different areas of agriculture as books or chapters in books. This is necessary because information written in books seems to be more accessible for entrepreneurs who will like to use the research findings than accessing the information from journals. Information in journals is more accessible by scholars who will like to use the information to enhance their research works.

3.   The Internet and some electronic information resources were frequently used by the researchers in NARIs to enhance their scholarly publication output. To further enhance scholarly publication output of researchers in NARIs, it is recommended that the Internet infrastructure should be acquired and installed in all NARIs. The service of a proven Internet Service Provider (ISP) should be engaged. The bandwidth should be high enough to allow for high speed navigation when the researchers are using the Internet. This is necessary because a good Internet service will aid the use of many other electronic information resources.

4.   This study confirmed that awareness of electronic information resources is important for scholarly publication output of researchers in NARIs. To improve the use of the Internet and other electronic resources in the institutes' libraries it is recommended that the level of

knowledge of digitalized databases of the researchers in NARIs should be continuously improved upon. The following methods are suggested for the creation of awareness among the researchers in NARIs. The use of research departmental notice boards, library notice boards, text messages, e-mails and telephone calls. The library management should also organise training workshops to make researchers acquire necessary skills to use the e-resources. The library management of each institute should create good relationship with HODs of research faculty so that library staff can address researchers during their departmental seminar presentations.

5.   The study confirmed that self-management practices among researcher were good for their job performance and that self-management of the researchers in NARIs was high. In view of this, the study wishes to recommend that for sustenance and further improvement of self-management features among the researchers in NARIs, the management of each institute, and ARCN as an agency that supervises the institutes should always organise trainings and re-training programmes that will continue to improve self-management features among researchers.

5.5   Contributions to knowledge

This study has contributed the following to knowledge:

The study confirmed that the awareness of e-resource among NARIs researchers had positive association to scholarly publication output. This is equally applicable to deployment of information in digital formats and self-management. The investigation also contributed to knowledge by showing that awareness of e-resources could be high like it is in this study, despite high awareness of e-resources among researchers, the frequency of the use of e-resources among the researchers may not be high, but it may be moderate as it is in this study. The study also contributed to knowledge by revealing that scholarly publication output of researchers in NARIs was moderate from 2009-2016 the feat attained in scholarly publication output by the researchers is assumed to have occurred due to increased awareness of e-resources among researchers in NARIs which stimulate the use of e-resources, conduct of research and consequently increased in scholarly publication output of the researchers in NARIs. This study has therefore enhanced the knowledge of library management to attach great importance to awareness creation among researchers to enhance use of e-resources by library users and particularly the researchers.

This study contributed to knowledge by establishing that though NARIs researchers used many e-resources but among those they used most frequently based on the findings of

this study include the Internet, e-mail, online databases, conference papers. The e-resources the NARIs researchers were highly aware of include online databases, e-books, e-encyclopedia, the Internet etc.

The study also contributed to knowledge because it revealed that researchers in NARIs do write their research findings in many scholarly publication output like complete textbooks, chapters in books, co-authored textbooks, patent and certified inventions, seminar papers, writing article in learned journals, conference proceedings and technical reports. Apart from this, the findings of the study also contributed to knowledge by establishing that researchers in NARIs have more articles in learned journals than any other scholarly publication output. This was followed by writing articles in conference proceedings.

5.6   Implication for the study

It can be derived from the study that the use of relevant e-resources by researchers can enhance scholarly publication output of researchers, but awareness of e-resources among researchers must be pursued vigorously to make the researchers have the desire to use available e-resources to enhance their scholarly publication output. The process that will lead to the attainment of self-management practices among the researchers NARIs should be pursued because it is a good management style in a research institute for higher and better job performance of researchers.

5.7   Suggestions for further studies

The findings of this study have implication for further research. The study only covered research institutes supervised by ARCN. The population of the study was also limited to 1089 researchers in the 15 NARIs. Based on the findings from this study, the researcher wishes to suggest the following as areas for further studies.

1.   A similar study should be carried out on other agricultural based research institutes in Nigeria   that are not under the supervision of ARCN.

2.   Similar studies should also be carried out among lecturers in the departments or faculties of agriculture in Nigerian universities and other tertiary institutions. The lecturers should be used as population for the study. This will further help to enhance research and scholarly publication output among other researchers in other agricultural based research institutes and tertiary institutions in Nigeria. Further studies suggested may enhance the status of scholarly publication output in agriculture and related disciplines in Nigeria. The effort

may improve and support the Federal Government of Nigeria's desire for speedy diversification of Nigeria economy through agriculture.

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APPENDIX I
UNIVERSITY OF IBADAN
DEPARTMENT OF LIBRARY, ARCHIVAL AND INFORMATION STUDIES
QUESTIONNAIRE FOR RESEARCHERS

Dear Sir/Ma,

I am a doctoral student in the Department of Library, Archival and Information Studies, University of Ibadan, Ibadan, Nigeria, conducting a research titled: Self-management, Awareness and Use of Electronic Resources as predictors of Scholarly Publication Output of Researchers in National Agricultural Research Institutes in Nigeria. It is part of the requirements for the award of Doctor of Philosophy of the University.

To enable me conduct this study, I require some information from researchers in National Agricultural Research Institutes. In view of this, I am encouraging all researchers in NARIs to support the successful completion of this study by voluntarily completing this questionnaire as correctly as possible. All responses will be treated very confidentially and used for the said purpose only.

Thank you for your cooperation.

Yours faithfully,

Akande, Femi T.
Matric No: 60239
GSM No: 08030433230

Section A

Demographic Information

1. Name of your Research Institute:……………………………………………………
   ………………………………………………………………………………………….
   …………………………………………………………………………………………..

2. Department: ……………………………………………………………………………

3. Area of Research Specialisation…………………………………………………………..
   ………………………………………………………………………………………….

4. (Please tick (√) only one) Attend to either question 4 (a) or (b).
   Question 4 (A) is for Respondents whose Institute is not attached to University while
   Q4B is for respondents whose Institute is affiliated to a University.

4(a) What is your present status in your Institute?

(a) Director ( )   (b) Assist. Director ( )   (c) Chief Research Officer ( )

(d) Principal Officer I ( ) (e) Senior Research Officer ( )

4(b) What is your present status at your Institute?

(a) Professor ( )   (b) Reader ( )   (c) Senior Lecturer ( ) (d) Lecturer I ( )(e) Lecturer II
( ) (f) Assist. Lecturer ( ) (g) Graduate Assist ( )   (g) Others please specify

5. Please indicate your highest level of academic qualification.
   (a) Bachelor's Degree ( ) (b) Master's Degree ( ) (c) Ph.D ( ) (d) Others. Please
   specify ( )

6. Job Tenure (years spent so far on the job ……………………………………………..

7. Age:……………………………………………………………………………………..

Section B

Self-management

Rate each item in the blank space provided before the item as applicable to you.

1. = Never true of me (NTM)
2. = A little of the time true of me (LTTM)
3. = Some of the time true of me (STTM)
4. = Most of the time true of me (MTTM)

S/No	Item	NTM (1)	LTTM (2)	STTM (3)	MTTM (4)
1.	When I fail at something, I am still able to feel good about myself.				
2.	I can stick to a boring task that I need to finish without someone pushing me.				
3.	When I do something right, I take time to enjoy the feeling				
4.	I seem to blame myself and be very critical of myself when things go wrong				
5.	I get upset with myself when I make mistakes.				
6.	My feelings of self-confidence is not stable, it goes up and down				
7.	If I do not do something absolutely perfectly, I don't feel satisfied				
8.	I get myself through hard things mostly by thinking I'll enjoy myself afterwards.				
9.	When I make mistakes, I take time to criticize myself.				
10	I learn from my mistakes so that I will do things better in the future.				
11	The way I achieve my goals is by rewarding myself every step along the way.				
12	I criticize myself when other people do not praise me				

13	I silently praise myself when other people do not praise me				
14	If I don't do the best possible job, I don't feel good about myself.				
15	My happiness depends more on myself than it depends on other people.				

Section C

Researchers Scholarly Publications output within the Period of 8 Years (2009-2016)

	Publication	**Before 2009**	**2009-2016**
1.	Complete Textbooks written	………………	………………
2.	Chapters in Books written	………………	………………
3.	Co-authored textbooks written	………………	………………
4.	Patent and Certified Invention	………………	………………
5.	Seminar papers written and presented	………………	………………
6.	Articles in learned Journals	………………	………………
7.	Articles in Conference Proceedings	………………	………………
8.	Technical Reports written	………………	………………

9. To what extent will you say your awareness of e-resources can contribute to your writing of quality scholarly publication on the mandate of your Institute?

   (a) Very Low extent ( ) (b) Low extent ( ) (c) High extent ( ) (d) Very high extent ( )

10. To what extent will you agree that your use of e-resources can contribute to your writing of quality scholarly publication on the mandate of your institute?

   (a) Very Low extent ( ) (b) Low extent ( ) (c) High extent ( ) (d) Very high extent ( )

Section D

Awareness of E-resources

1. Are you aware that information is available now in Electronics format, like the Internet and other agricultural electronic databases like AGORA which are called E-resources?

    (a)   Very high awareness ( )   (b)   High awareness ( )

    (c)   Very low awareness ( )   (d)   Low awareness ( )

2. How did you get to be aware about E-resources?

    (a)   Institute's Library ( )   (b)   In a University Library ( )

    (b)   From Literature ( )   (d)   From Friends ( )

3. To what extent are you aware of the following E-resources in the course of your academic work?

    Respond using the following:

    NVA – Not Very Aware   (1)

    NA -   Not Aware   (2)

    FA - Fairly Aware   (3)

    VA – Very Aware   (4)

Level of awareness of E-resources among researchers in NARIs

Electronic Resources	NVA	NA	FA	VA
Electronic Resources				
The Essential Electronic Agricultural Library (TEEAL)				
Online Access to Research in the Environment (OARE)				
Access to Global Online Research in Agriculture (AGORA)				
Health Internetwork Access to Research Initiative (HINARY)				
Agricultural Online Access (AGRICOLA)				
Agricultural Database (AGRIS)				
Science Direct				
Elton B. Stephens Co (EBSCOHOST)				
Journal Storage (JSTOR)				
Electronic Journals (E-Journal)				
E-books				
Online Catalogue				
Encyclopaedia				

Internet				
Electronic mail				
E-newspapers/magazines				
CD-ROM Databases				
E-Dictionaries				
Theses/Dissertations				
Tutorials				
Maps				
Conference papers/ monographs				
Video cassette				
Audio cassette				
Computer Software				
Blog				
Presentation slides				
Online forum				
Qualitative data/Online interviews				
Electronic Resources				
The Essential Electronic Agricultural Library (TEEAL)				

Section E

Use Of E-Resources

How frequently do you use the under listed e-resources for your research work? Please indicate by using these options (a) Daily (5), (b) Weekly (4), (c) Monthly (3), (d) Quarterly (2), (e) Annually (1)

Electronic Resources	Daily	Weekly	Monthly	Quarterly	Annually
Online Databases e.g. AGORA etc.					
Electronic Journals (E-Journal)					
Electronic Books					
Online Catalogue					
Encyclopaedia					
Internet					
Electronic mail					
www					
E-newspapers/magazines					
CD-ROM Databases					
E-Dictionaries					
Data archive					
Theses/Dissertations					
Tutorials					
Maps					
Conference papers/ monographs					
Microfilm reel					
Microfiche					
Video cassette					
Audio cassette					
Computer Software					
Blog					
Presentation slides					
Online forum					
Qualitative data/Online interviews					

I thank you most sincerely.

List of Institutes in National Agricultural Research Institutes (NARIs)

1. Cocoa Research Institute of Nigeria (CRIN) Ibadan

2. Institute of Agricultural Research and Training (IAR&T) Ibadan (Owned by Obafemi Awolowo University)

3. National Institute for Horticultural Research (NIHORT) Ibadan.

4. National Institute for Oceanography and Marine Research (NIOMR) Lagos.

5. Nigerian Stored Product Research Institute (NSPRI), Ilorin

6. National Veterinary Research Institute of Nigeria (NVRI), Vom

7. National Cereal Research Institute (NCRI) Badegi

8. National Institute for Freshwater Fisheries Research (NIFRR), New Bussa.

9. National Animal Production Research Institute (NAPRI), Zaria (owned by Ahmadu Bello University, Zaria).

10. National Extension and Research Liaison and Services (NEARLS), Zaria. (Owned by Ahmadu Bello University), Zaria.

11. Institute of Agricultural Research (IAR) Zaria. (Owned by Ahmadu Bello University).

12. Rubber Research Institute of Nigeria (RRIN), Benin.

13. National Institute for Oil Palm Research (NIFOR), Benin.

14. Lake Chad Research Institute (LCRI), Maiduguri.

15. National Root Corps Research Institute (NCRI), Umudike.

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