LIBRARY RESOURCES, SERVICES AND USE AS FACTORS INFLUENCING PUBLICATION OUTPUT OF FISHERIES SCIENTISTS IN NIGERIA

BY

IJEOMA DORIS MADU

B.Ed, Benin; M.L.S. Ibadan

MATRIC NO: 84590

BEING A THESIS SUBMITTED TO THE DEPARTMENT OF LIBRARY, ARCHIVAL AND INFORMATION STUDIES, UNIVERSITY OF IBADAN IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY (Ph.D) DEGREE OF THE UNIVERSITY OF IBADAN

JULY, 2013.

ABSTRACT

Fisheries research support libraries in Nigeria are at the centre of information provision for fisheries research and development. As part of their responsibilities, they are expected to contribute to the increased publication output of the fisheries scientists which seems to be low. Available studies focused on the effect of library resources and services on publication output of agricultural scientists in general while there is a dearth of studies on the influence of factors that could affect the publication output of fisheries scientists in particular. This study, therefore, investigated library resources, services and use as factors influencing publication output of fisheries scientists in Nigeria.

The Survey research design of the *ex- post facto* type was adopted. The Multi-stage random sampling procedure was used to select 335 fisheries scientists and 24 librarians (n = 359) from the three fisheries research institutes, three colleges of fisheries, 18 departments of fisheries in federal and state universities in Nigeria and 24 heads of the libraries. Six instruments were used for data collection: Fisheries Scientists' Questionnaire on Library Use (r = 0.71); Publication Output Questionnaire (r =0.77); Librarians' Questionnaire on Availability of Library Resources (r = 0.73); Availability of Library Services (r = 0.68); Use of Library Resources (r = 0.81) and Use of Library Services (r = 0.76). Six research questions were answered and five hypotheses tested at 0.05 level of significance. Data were subjected to descriptive statistics, Pearson Product Moment Correlation and Multiple Regression.

The following proportions of the respondents indicated that computer based and other library resources and services were available, functional and adequate in their libraries: CD-ROM (40.9%); Internet (60.3%); print resources (83.6%); library staff (90.4%); reference services (79.2%) loans (66.7%) photocopying services (54.2%) and Selective Dissemination of Information (SDI) (37.5%). Majority of the participants (62.7%) found journals most useful. There was a significant joint influence of availability of library resources, availability of library services, adequacy of library services, use of library resources and use of library services (R = 0.26) on publication output of the fisheries scientists ($F_{(5,329)}$ 5.83, P < .05). This implies that 6.7% of the variance in the publication output was accounted for by the combination of the independent variables in the dependent variable. The relative significance of four of the independent variables was: availability of library resources (β = -.140, t = 2.55, P< 0.05); availability of library services (β = 0.156, t = 2.68, P<0.05) use of library resources (β = -.147, t = 2.13, P<0.05) and use of library services (β -.141, t=2.18, P<0.05). This implies that adequacy of library services, unlike these other variables, did not have remarkable influence on the publication output of fisheries scientists in Nigeria.

Library resources, services and use jointly, relatively highly contributed to the publication output of fisheries scientists in Nigeria. Fisheries research libraries need to increase provision of CD-ROM, Selective Dissemination of Information and other information resources and services for increased publication output of fisheries scientists in Nigeria.

Key words: Fisheries scientists, Publication output, Library resources, Library services, Library use.

Word Count: 490

CERTIFICATION

I certify that this research was carried out by Ijeoma Doris MADU in the Department of Library, Archival and Information Studies, University of Ibadan, Nigeria.

……

Supervisor
Dr. K.I.N. Nwalo
B.A. (Hons), University of Lagos, Nigeria
M.L.S., Ph.D., University of Ibadan, Nigeria

DEDICATION

This doctoral research project is dedicated to the loving memory of my late father, Mr Patrick Onyenyilichukwu Onuorah for the good life he lived and the legacies he left.

ACKNOWLEDGEMENTS

The success of this research was due to the contributions, support and encouragement provided by some individuals and institutions directly or indirectly.

My mentor, Dr K.I.N. Nwalo, after supervising my dissertation for the M.L.S. degree, encouraged me to register for a higher degree in this field which, incidentally, he also supervised. His unrestrained guidance, suggestions, criticisms and advice were the driving force that propelled the successful completion of the research. I have come to greatly appreciate his insistence on objectivity, his creativity, thoroughness and drive. I am indebted to him and challenged by these qualities.

I am grateful to Dr O. A. Okwilagwe, the Head of Department of Library, archival and Information Studies for providing an enabling environment for the successful completion of the research. Acknowledged also are the support and encouragement of all lecturers in the LARIS Department especially Prof. Iyabo Mabawonku, former Head of the Department, Prof. Morayo Atinmo, former Dean of Faculty of Education, Prof. G.O. Alegbeleye, Dr S. O. Popoola, Dr Abioye, Dr Adetimirin and other teaching and non- teaching staff of the Department. I appreciate the contributions of Dr D.A. Oluwole of the Department of Guidance and Counselling and Dr (Rev.) D. Ogunleye of the Department of Teacher Education both of whom read, criticised and provided vital suggestions that improved the research and the thesis. I am also grateful for the suggestions of Dr B.O. Oladele, the University Librarian of Kenneth Dike Library, University of Ibadan.

I acknowledge the contribution of Dr M.O. Ibeun, former Director of Library, Information and Documentation Division, National Institute for Freshwater Fisheries Research, New Bussa whose suggestions and criticisms were quite useful in improving the research. I express my gratitude for the support and assistance of lecturers in the department of Fisheries and Wildlife Management, Unibadan especially those of Prof. B.O. Omitoyin, the Head of Department, Dr E.K. Ajani, Dr O. Olukunle, Dr. A.O. Akinwole, Dr. A. Jenyo-Oni, Dr. B.T. Fregene and other teaching and non-teaching

staff of the Department. I also appreciate the support and assistance of lecturers and other staff of the Fisheries and Aquaculture Department of Federal University of Agriculture, Abeokuta especially Prof. S.O. Otubusin and Prof. G.N. Ezeri.

My profound appreciation goes to all those who assisted and facilitated the process of data collection, notably, Mrs D. Molokwu and Mr Charles (F.C.F.M.T; Lagos), Mrs V. Ohimain and Mr B.N. Igwe (NIOMR, Lagos), Mr D.C. Chikezie and Mrs A. Ibegwam (F.U.A; Umudike) Dr O.O. Sogbesan (F.U.T; Yola), Miss C. Otigba (F.C.F.F.T.; Baga), Dr Mrs V.N. Ahiauzu (R.S.U.S.T; Port Harcourt), the University Librarians of all the universities in the study and all those who helped as research assistants in all the institutions in the research. They are too numerous to mention here but their assistance are highly appreciated. I must, however, mention the assistance of Mr O.A. Odebiyi of Federal College of Wildlife Management, New Bussa.

Gratefully acknowledged is the contribution of my employer, Federal College of Freshwater Fisheries Technology, New Bussa in granting me the opportunity for this research and for releasing me whenever it was necessary. I acknowledge especially the support of the former Provost, Dr A.A. Eyo and that of the present Provost, Dr C.T.Madu.

I will ever remain grateful to my dearly beloved husband, Dr Chuka T. Madu who, incidentally, is the Provost of my institution and my direct boss. His total support, love, care, encouragement, suggestions and sacrifice have materialized in the successful completion of the programme. To him I say, “thank you for the confidence you reposed in me which provided the impetus for this success. May God bless you abundantly”. The sacrifice, support, love and prayers of our loving children: Otito, Chika, Edozie and Amaka are also acknowledged with love and gratitude. May God bless them.

My sincere appreciation goes to my dear mother, Mrs Elizabeth Onuorah and my siblings especially Mrs Ifeoma Iwu, Mr J. E. Onuorah, Mr O. K. Onuorah and my other relations who supported me with their prayers, encouragement and advice. I acknowledge the support of my colleagues especially my deputies: Mr F.C. Ugwu, Mr S.k. Omowaye and other staff of F.C.F.F.T. Library, New Bussa. Specially acknowledged are Mrs Olufeagba, Mrs Oyewale and Mr Shaba Mohammed for providing secretarial support at various stages of the research. I extend my appreciation

to my friends, Mrs Agufugo, Mrs Azor and many other persons (too numerous to mention here) who contributed to the success of the study by their prayers, support, encouragement and good wishes. I sincerely pray God to reward you all, adequately.

I most humbly acknowledge the spiritual support, prayers and encouragement of my past and present priests and religious: Rev. Fr Patrickson Francis, Rev. Fr Francis Rozario, Rev. Fr David Esako, Rev. Fr Dominic Sugaraj, Rev. Fr Prem Raju, Rev Fr Zhamphier Gabriel, Rev Fr Fabian Ukachi and Rev Sr Lucy Eghaghara.

Finally, I am most grateful to God almighty, who, in His infinite mercy and love, made this endeavour possible and blessed it with success. To Him be glory, honour and praise for ever.

TABLE OF CONTENTS

LIST OF TABLES

PAGE

LIST OF FIGURES

PAGE

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Food is one of the basic necessities of life. As such, the United Nations Educational, Social and Cultural Organization (UNESCO)'s 1999 list of basic human needs which shows the minimum requirements for a decent standard of life has adequate food as the first on the list which also includes shelter, clothing, community services, human right needs, public participation in decision making and productive employment. People need to be well fed for a healthy living. Hence, qualitative food must be made up of different classes of food in adequate proportion. One of the important classes of food is protein which builds up body tissues.

Fish is a very important source of animal protein. Compared to other sources of animal protein like meat, milk and cheese, fish is the cheapest and also the most wholesome of all. According to Dada (2003), fish is available to all Nigerians in various forms such as fresh, smoked, canned, chilled or frozen. Thus scarcity of fish in markets is hardly recorded. Its contribution to national food security is enormous as there is rarely any religious taboo affecting the consumption of fish unlike pork and beef. Fish is easy to prepare and a delicacy in every meal. It forms a substantial part of the protein intake of the average Nigerian. Additionally, it contributes 40% of total dietary protein consumption in the country (Dada, (2003). It is recommended that one should have, at least, a meal of fish a day for a healthier and longer life as fish is an indispensable source of micronutrients such as iron, iodine, zinc, calcium, vitamins A and B. (World Fish Centre, (2005).

However, Nigeria has been reported to be a protein deficient country (Anon, (2000) and NEPAD-FAO, (2006). Data on exact levels of fish consumption in Nigeria are not conclusive but per capita consumption of fish has fallen from 13kgs per year in the 1970s to about 6.6kgs per year in 2006.

The most recent fishery statistics of Nigeria by Federal Department of Fisheries (FDF), (1995-2007) shows that per capita consumption of fish in Nigeria has

risen to 9.7kg. This figure is still much below the FAO/ WHO recommended standard of 12.5kg per capita (NEPAD-FAO, (2006). The shortfall in domestic fish landing, in addition to the restriction on imports and a galloping demographic growth are the main causes of the dwindling trend in per capita fish consumption. The increasing deficit was reduced by importation of frozen fish. Data from the FDF presentation on the fisheries development sub-sector at the presidential forum of 2003 shows that 700,000 tonnes of fish were imported annually amounting to foreign exchange of about ₦350,000,000.00 expended on importation of fish. With the present Nigerian Government's ban on importation of frozen fish, the commodity has become unaffordable especially by the masses. The permanent solution to this problem is an increased, sustainable local fish production.

The inventory of reservoirs and lakes in Nigeria which was made by Aquaculture and Inland Fisheries Project of 2004 shows that the country is blessed with more than 12 million hectares of inland waters. The natural resources to meet the demand for fish and fish products are available in the country. There is a vast network of water bodies, saline swamps and land, in addition to the seas and lagoons which can be greatly utilised for local fish production. Aquaculture and Inland Fisheries Project (2004) reported in its inventory of fish farms in Nigeria that present fish production from aquaculture was estimated at some 25,000 metric tonnes (MT), while fish production from largely unmanaged inland waters amounted to 150,000MT. On the whole, about 1945 hectares of fish ponds existed in Nigeria while an additional 3,500 hectares was reported to be under construction or proposed. It is evident therefore that Nigeria is richly endowed with great potentials for becoming self sufficient in fish production. The country only needs the right management input supported by a solid foundation of research to adequately harness the natural resources.

This would bring about the desired increase in fish production as part of the national food security programme of the country.

Data from the Federal Ministry of Agriculture and Rural Development and Federal Department of Fisheries (FDF) show fluctuation in local fish production from 483,000 tonnes in 1998 to 477,000 tonnes in 1999 and 482,000 tonnes in 2000 with a projection that by 2009, demand for fish in the country would have exceeded supply

by 6000,000 tonnes. This fluctuation suggests lack of sustainability in fish production which is an issue to be seriously addressed if the country must ensure national food security through fisheries development. Sustainability can best be guaranteed through research based policies and programmes. The aquaculture technical review paper of NEPAD/World Fish Centre, fish for all summits (2005) reported Nigerian aquaculture production value as at 2003 to be US $77,253.00. If the fisheries and aquaculture potentials are properly harnessed, this value can increase substantially and thus enhance Nigeria's economic development. Effort is being made by the government to reduce the problem of inadequate supply of fish and fisheries products in the country. Such efforts include the establishment of fisheries research institutes and centres.

Fisheries research institutes and centres in Nigeria are the institutions and centres that primarily or partly engage in research activities in the area of fisheries. These include the fisheries research institutes namely: National Institute for Freshwater Fisheries Research (NIFFR), New-Bussa, National Institute for Oceanography and Marine Research (NIOMR), Lagos, African Regional Aquaculture Centre (ARAC), Aluu, Port-Harcourt; the colleges of fisheries namely: Federal College of Freshwater Fisheries Technology (FCFFT), New Bussa, Federal College of Freshwater Fisheries Technology (FCFFT), Baga, Bornu State and Federal College of Fisheries and Marine Technology (FCFMT), Lagos. In addition are thirty Nigerian federal and state universities that have departments of fisheries (JAMB brochure, 2010/2011 academic session).

The conservation of natural resources such as fisheries is one of the major global challenges today. Fisheries research and production are of great importance in the sustainable development of the renewable natural resources in fisheries. The fisheries research institutes and centres are making effort towards meeting the challenges of guaranteeing continuous rational exploitation and production of the valuable resources for food security and livelihood. They have, therefore, the underlying objective of developing and transferring technologies for fisheries production and conservation for socio-economic development. Presently, efforts are

made towards standardization of fisheries practice in the country by the establishment of the committee for the standardization of fish farm practices. However, despite the effort of the government and other stakeholders, fish is still not in adequate supply in the country as it is still not easily affordable by the average Nigerian. Sustainability of Fisheries and adequate production of fish in the country can best be achieved through a solid foundation of research and sustainable fisheries development programmes.

Research depends a great deal on information and this is why review of literature is a major component of research. Eluagu (2005) opined that the need for literature review is to familiarise with people's work in the chosen area of research. Similarly, Olayinka and Owumi (2006) suggest that a review of literature, among other purposes, helps to demonstrate the researcher's familiarity with the area under consideration. Thus, information is a basic necessity for research. In any research setting, the library and information services make available information needed for the research process. Studies such as Ibeun (1995 and 2004) have established that the library is the first port of call for information for fisheries researchers. The library provided by the institutions that have employed the fisheries research scientists are therefore fundamental facilities for research.

The entire research process has been presented by studies such as Mckenzie (1999) and Aina (2002) as a cycle. Aina (2002) asserts that regardless of the motivation, a number of stages are involved in the research process and that is more or less a cycle from the first and most important stage of recognition of a problem which must be selected and appropriately defined, to the last stage of dissemination of research findings (publication). It is safe, therefore, to state that every research starts and ends in the research library. This is so because problem recognition, the first stage of research, most often emanates from consultation of publications or experience from accumulated information. Mckenzie (1999) has represented the seven stages of research in a circular form called the Knowledge Generation Model. In a research environment, the publications and information media are housed in the library. At the end of the research process, the information product which is the fruit of the labour of

research, the publication, is kept in the research library. It forms the information base for further or other research.

Fisheries research libraries in Nigeria are the libraries of the fisheries research institutes, those of the colleges of fisheries and those servicing the departments of fisheries in Nigerian universities that have such departments. These include the fisheries department libraries as well as the universities' main libraries which cater for the needs of all the departments in the universities. The libraries have the objective of providing varied but relevant information resources and services in support of the research activities of the fisheries scientists as well as the educational benefit of students of fisheries in Nigerian tertiary institutions. Library use is a vital aspect of work activities of the fisheries scientists. The intensity of the scientists' use of the library and their level of exploitation of the library resources and services are expected to have some relationship with their level of research output since information is a basic necessity for research. The intensity of library use and the level of exploitation of library resources and services differ with individual fisheries scientists according to adequacy and accessibility of library resources and services available to them and the personal attributes of the fisheries scientists.

Popoola and Zaid (2007), discussing faculty awareness and use of library information products and services in Nigerian universities, opine that university libraries, by their very nature, are expected to acquire, process into retrievable form and make available the much needed information to the academic community and the public at large who may require them for their various teaching and research activities. The accomplishment of this function, they suggest, depends on the available stock of information products in the libraries, the efficiency of the libraries in rendering effective information services and their ability to stimulate primary demands for their products and services through functional library promotion programme. The same is also true of the other fisheries research libraries: the fisheries research institutes and the colleges of fisheries libraries. Furthermore, the accomplishment has the potential of translating into enhanced publications output of the fisheries scientists.

Publications output is one of the strong determinants of productivity of researchers. The findings of a research, presented in descriptive statements are usually widely disseminated for other researchers in the discipline to be able to react to the study. This is because research is generally not regarded as complete until it is disseminated widely (Aina, (2002). In the opinion of Popoola (2008), one of the critical factors used in determining productivity is research output. Additionally, local and international recognition and respect are partly determined by published works. The researcher may disseminate his findings either through oral presentation at a conference, workshop and seminar or in form of publications in journals and as theses and dissertations, reports or books. It may also be disseminated on the internet. Publications output can be said to be the fruit of the labour of research activity and it is a major parameter by which the productivity of researchers is adjudged in any research environment. It should be noted, however, that acceptable standards and numbers are not recommended in literature.

Research, which is an important component of any discipline, is critical to the growth of every profession, including fisheries. This is why the issue of productivity (research output) of fisheries scientists is of paramount importance to policy makers in the fisheries industry (Ibeun, (1995). Publication output of fisheries scientists can be measured by the number of publications produced in a given time period. Regulations of the institutions employing fisheries scientists in Nigeria, i.e. universities, research institutes and colleges of fisheries state that academic/research staff are evaluated for promotion every three years and every four years for the very senior levels. Their publications output can be measured, therefore, by determining the number of publications they have made in referred works in a three or four year period.

The quality of teaching, learning and research in any academic or research institution depends, to a large extent, on its library's information resources and services. Information availability, accessibility and use are essential to effective teaching and research. According to Meadow and Yuan (1997) as reported by Popoola (2008), information is a message that changes the recipient's knowledge base. This

means that information increases the existing knowledge of the user. Significantly, the information resources and services available in academic and research libraries are therefore, expected to be able to support the research activities of the parent institutions. They are expected to acquire, organise in retrievable formats and make available needed information to the academic staff and researchers for their teaching and research activities. The ability of the libraries to carry out this function effectively depends on availability and accessibility of information resources such as books, journals, research and technical reports, conference proceedings, theses, dissertations, periodicals, reference sources, microforms and ICT. It has been established by studies such as Ibeun (2005), Popoola and Zaid (2007) that the ability of the libraries to render effective information services such as current awareness, documents delivery, photocopy service, Internet and E-mail, Selective Dissemination of Information (SDI), bindery, on-line database searching, translation, technical report writing, user education, current contents listing, consultancy; has correlation with the availability of their resources. Furthermore, academic and research libraries are expected to facilitate demands for their resources and services through functional library promotion programmes such as user education, library orientation, study tours, exhibitions, publication of users' guides and information repackaging. Studies such as Neclameghan (1985), Ifidon (1988) Schumacher (1996) Ojo-Ade & Jagboro (2000), Okiy (2000), Popoola (2002), Kemani (2002) and Ojedokun and Owolabi (2003) present a picture of under utilization of the resources and services of academic and research libraries in Nigeria as in many libraries in developing countries. The use of library resources and services has been established by studies such as Meadow &Yuan (1997) and Popoola (2008) to have relationship with research/publications output of academic staff and researchers in any academic and research environment. They have also shown that the highly productive scholars are more information rich than their counterparts. Information richness here is considered in terms of the abundance of information resources available and accessible to the user as well as their quality in terms of their intellectual content. Consideration is placed on recency, relevance,

coverage of the sources as well as authority of the authors. If the institutional information services fail to meet the needs of the scientists, they would use other available systems.

The shift from print to electronic information sources as a result of advances in information and communication technologies (ICT) affords users the availability of a vast array of information. However, Roy (2006), discussing information accessibility as proposed by Dodge (1999), states that it is based on access to relevant resources at the right time. This concern stems from the idea that the Internet can provide access to a vast array of information resources. However, because of this information overload, it does not necessarily provide access to useful, current, reliable and affordable information and at the right time.

Agba, Kigongo – Bukenya & Nyumba (2004) assert that the shift from print to electronic information means that both academic staff and students in a university system and elsewhere must use these resources for better quality, efficient and effective research more than ever. They should, however, be used with a high sense of evaluation because the information resources and services available in the institutional information systems must be capable of supporting research activities in the institutions.

Information is the essential commodity that is needed for improved productivity of academic staff and researchers. Popoola (2008) found that there are main and interaction effects of the use of information sources and services on research output. He concludes that the use of information sources or services will improve the research output of the researchers and if the information sources and services available in their institutional information systems or elsewhere are used, their research output is more significantly enhanced. However, it has been observed that the much needed information resources and services in support of fisheries research in Nigeria are inadequately provided by the fisheries research libraries. This is most likely to have some limiting effects on the publications output of the fisheries scientists. The FAO (2007) has reported that the editorial boards of scholarly and peer-reviewed journals

reject the publications of African scientists because of the lack of up-to-date citations. Citing current research articles is only possible if the scientists have access to current scholarly journals and this has not been the case in many fisheries institutions in Africa. This problem has led to the low publication output by the fisheries scientists and ultimately has contributed greatly to the inadequate supply of fish and fisheries products in Nigeria particularly and in Africa generally.

1.2 Statement of the Problem

The fisheries research library is expected to meet the information needs of fisheries scientists especially for research and publications. Where the library is effective, the scientists are expected to highly utilise its resources and services for higher productivity. The corollary is also true. However, existing literature surveyed shows that there is dearth of research studies on the relationship between the use of library resources and services and the productivity of fisheries scientists in Nigeria.

It has been observed that the much needed information resources and services in support of fisheries research are inadequately provided by research institutes, colleges of fisheries and universities involved in fisheries research in Nigeria (Verma, 1988, Igbeka, 1995). This has resulted in the tendency for the fisheries scientists to rely more for their information on sources other than their institutions' libraries. This is evidenced by the perceived low level of patronage of the libraries by the fisheries scientists. Such practice has implications to the researchers' time and level of productivity since the library, if properly run, is best suited to support the fisheries scientists in their research and publications. It has also contributed to the low publications output by the fisheries scientists as is reported by Hecht (2004) and FAO (2007). The situation may even be worse at present, considering the effect of the global economic meltdown on the funding of public institutions in Nigeria, especially libraries.

The study, therefore, investigated the influence of library resources, adequacy of services and their use on publications output of fisheries scientists in Nigeria.

1.3 Objectives of the Study

The main objective of the study is to investigate the influence of library resources, services and use on the publications output of fisheries scientists in Nigeria.

The specific objectives are to:

1. determine the level of availability of library resources in fisheries research support libraries in Nigeria;
2. determine the level of availability of library services in fisheries research support libraries in Nigeria;
3. examine the level of adequacy of the services provided by the fisheries research support libraries in Nigeria;
4. determine the extent to which the library resources and services are utilised by the fisheries scientists in Nigeria and
5. ascertain the contribution of availability, adequacy and use of library resources and services on publications output of fisheries scientists in Nigeria.

1.4 Research Questions

In order to achieve the research objectives, the following questions were answered in the study:

1. What is the level of availability of library resources in fisheries research support libraries in Nigeria?
2. What are the services provided by the libraries to the fisheries scientists in Nigeria?
3. How adequate are the services provided by the libraries to the fisheries scientists?
4. What is the frequency of use of the fisheries resources and services by the fisheries scientists in Nigeria?

5. What is the joint influence of availability of library resources, adequacy of services of the fisheries research libraries and use of the library resources and services on the publications output of the fisheries scientists?
6. What is the relative influence of each of the independent variables on publications output of the fisheries scientists?

1.5 Hypotheses

The following null hypotheses were tested in the study at 0.05level of significance:

Ho1 There is no significant relationship between availability of library resources and publications output of fisheries scientists in Nigeria.

Ho2 There is no significant relationship between availability of library services and publications output of fisheries scientists in Nigeria.

Ho3 There is no significant relationship between adequacy of services provided by the fisheries libraries and the publications output of the fisheries scientists in Nigeria.

Ho4 There is no significant relationship between use of library resources and publications output of fisheries scientists in Nigeria.

Ho5 There is no significant relationship between use of library services and publications output of fisheries scientists in Nigeria.

1.6 Scope of the Study

The study focused on the extent to which library resources, services and use influence publications output of fisheries scientists in Nigeria. It determined the level of availability of information resources and services in the fisheries research support libraries, the adequacy of services rendered by the libraries in support of fisheries research and publications and the extent to which the fisheries scientists in Nigeria utilise the resources and services for their information needs. It also determined how much these factors influence the publication output of the fisheries scientists.

The publications taken into consideration are books, chapters in books, journal articles, conference/workshop proceedings and technical reports.

1.7 Significance of the Study

The study is significant to the fisheries scientists in Nigeria, fisheries libraries, fisheries institutions and other stakeholders in the fisheries subsector of the Nigerian economy. It provides empirical evidence on the relationship between the libraries' resources and services, the use made of them by the users and the impact of these on their productivity in terms of publications output. The library is expected to provide the much needed information resources and services in support of research. The resources and services must be relevant, up-to-date and timely in order to meet the information needs of the users and to make the expected positive contribution to their research and publications productivity. In addition to providing adequate library resources and services, the fisheries research libraries have the responsibility of ensuring the use of the resources and services; otherwise, these would amount to futile efforts. They can ensure use by promoting user awareness and user education programmes for their existing resources and services. The research, would therefore, reveal the level of provision of information resources and services by fisheries research libraries and the level of use of the resources and services by fisheries scientists in Nigeria for their information needs for research and publications.

Results of the study would reveal the productivity levels of fisheries scientists in Nigeria so that the fisheries sub-sector can determine its contribution to food security and national development. This is particularly important, considering the present global food crises. Fish, as a source of "rich food for poor people", can play an important role in improving Africa's food security and nutritional status. More than 200 million Africans eat fish regularly. It is a critical source of dietary protein and micronutrients in rural areas and for poor households in urban or semi-urban areas.

Findings of the study would form a source document for sensitizing the fisheries research institutions to pay adequate attention to their libraries' development.

This will empower the libraries for adequate provision of relevant library resources and services to the fisheries scientists. This in turn is hoped to result in enhanced publications output of the scientists and increased productivity of the fisheries sub-sector of Nigerian economy.

The study would also reveal the level of utilisation by fisheries scientists in Nigeria of the fisheries research support libraries for their information needs for research and publications. This is highly necessary especially in the present global economic meltdown which necessitates the economic justification of every venture. The fisheries research libraries must be acknowledged to justify their existence in the fisheries research institutions and departments.

The study would also provide additional contribution to the subject area of library assessment in the field of library and information studies discipline.

1.8 Operational Definition of Terms

The following terms are hereby defined in the context in which they were used in the study:

Adequacy of library resources and services: This is the level at which the available library resources and services meets the information needs of the fisheries scientists.

Availability of library resources: This is the presence or not of all information resources physically present in the library including those of which use the library can facilitate even when they are not physically present (for example, through networks and resource sharing with other libraries and information centres).

Availability of library services: These are all programmes, activities and operations which are put in place to ensure that user needs are met.

Fisheries scientists: These are a group of people engaged in carrying out research activities in fisheries based institutions and those teaching fisheries and related subjects in Nigerian institutions of higher learning. They may be holders of B.Sc.; M.Sc; or Ph.D degrees.

Publication Output: This is the number of published information materials to the credit of a fisheries scientist for the dissemination of his research findings. Publications considered in the study are books, chapters in books, journal articles, conference/workshop proceedings and technical reports.

Use of library resources and services: This is taking advantage of the resources and services of the library in order to acquire information or satisfy information needs for research, teaching, educational development and for leisure.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter is devoted to review of literature related to the study. It was carried out in three sections: empirical literature review, theoretical framework and conceptual framework. Under the empirical literature review, a survey of existing literature relevant to the study was carried out under these subheadings:

2.2 – Library and information services and fisheries research
2.3 –Availability and accessibility of information sources to fisheries scientists
2.4 –ICT use in information provision and library services
2.5 –Adequacy of library resources and services
2.6 –Use of the library and publications output
2.7 – Library services and research productivity
2.8– Publication output as measure of research productivity
2.9–Theoretical framework
2.10–Conceptual framework
2.11–Appraisal of literature reviewed

2.2 Library and Information Services and Fisheries Research

The proliferation of interest in knowledge management in the last few years is a reflection that information has gained visibility as a major corporate asset. According to Ashdown and Smith (1999), sharing information across the organisation to support greater learning and competitiveness has resulted in moving to the next level of information management – knowledge management.

Information relevant to fisheries management in general is complex. FAO (2007), discussing fisheries information in developing countries – support to the implementation of the code of conduct for responsible fisheries observes that the

subject area is broad and multidisciplinary; has depth in terms of time and perspective; encompasses various scales from local to global and originates in a complex mix of sources. The publication further hints that the editorial boards of scholarly and peer-reviewed journals reject the publications of African scientists because of the lack of up to date citations. Citing current research articles, it explains, is only possible if the scientists have access to scholarly journals, which has not been the case in many African fisheries institutions. The result is that most African scientists publish in the form of grey literature, such as institutional reports. It is estimated that in some African countries, up to 70% of fisheries research is published as grey literature, the remainder in conference proceedings or as theses. Only a small percentage finds its way into scholarly journals. For instance, FAO (2007) highlights the problem of funding as inhibiting publications in developing countries.

> A common problem in research institutions is the lack of funds to publish regularly. In some cases they are not able to publish and distribute the results of their research at all. One example of a regular series that provides access to much of the research on Nigerian fisheries is the Nigerian Fisheries and Aquatic Science Abstracts. Published by the National Institute for Freshwater Fisheries Research, New-Bussa since 1988, the two most recent volumes are compiled on the library computer, unable to be printed and distributed due to Lack of funds.

The lack of opportunity to publish and the loss of the valuable results of research and development programmes lead to the repetition of much of the same work.

The consequences of this are the wasting of time and effort and little of the knowledge gained is passed on to subsequent generations. One of the most serious consequences of the low scientific publication rate and high rejection rate is demoralised scientists, high emigration and a loss to the economic development of the country (Hecht, 2004, as reported by FAO (2007).

Webster, Merrikin & Collins (2000) discussing the complex web of information that ranges from pure science to applied techniques to management policies, opine that grey literature tends to be at the bottom of the information web in

part because it is hard to identify and access, particularly in the increasingly digital environment. It also sinks because it is not recognised as valuable given peer pressure on people to publish in the commercial journals. Consequently, relevant information is easily overlooked and underutilized especially if it originates in a developing country. This phenomenon may devalue the work of scientists and managers in developing countries, slowing responsible management of the natural environment and its valuable resources. If information is difficult for the end user to find or access, it tends not to be used as readily. The authors further emphasised that the grey literature of Fisheries needs to be more visible so it can be more viable in the information web as researchers and managers use discovery tools that are familiar and readily available. Some of these tools are well established with sophisticated indexing and defined sources such as CAB and Biosis. Others are emerging as useful tools, for instance, GoogleScholar.

The quantity and diversity of fisheries information pose challenges for libraries, which have to organise and manage information as a service to users, and for individuals who need easy and cost-effective access to fisheries information. Its accessibility is made more complex because of the issues discussed earlier i.e. its broad and multidisciplinary nature, its depth and so on. These factors make it essential for institutions and libraries to co-operate and to share the available information resources. However, according to FAO (2007), given the difficulties of publishing, African researchers often feel the need to protect their research results rather than share them with colleagues. The whole concept of information sharing is based on recognition of the originator. Such acknowledgement is difficult to achieve when there are limited opportunities to publish. Additionally, validating the research results is impossible unless they reach the appropriate audience. The publishing barriers have a cascading effect on the Fisheries community's ability to share, test and use research.

Information is a very important constituent for education, extension, research and development in Fisheries sector. Subbaiah (2007) suggests that a Fisheries Information System (FIS) which should generate, collect, organise and disseminate

fisheries research information to teachers, scientists and students as well as technical and marketing information to managers, fishermen and other stakeholders to take maximum advantage of the emerging world's trade regime is to be considered a priority in fisheries development. The author evaluates the resources, facilities and services of information units of fisheries related organizations in India and puts forward suggestions for establishing an FIS and resource sharing network to extract maximum utility of the information resources available in the sector.

2.3 Availability and Accessibility of Information Sources to Fisheries Scientists

Zhou and Subasinghe (2010) hinted that while significant progress has been made on improving the data and information needs for promoting sustainable Fisheries and Aquaculture worldwide, there remains much work to be done to further improve the knowledge base on Fisheries and Aquaculture. Recently, on the advice of the members, a strategy and outline for improving information on status and trends of Aquaculture has been developed by the FAO. The strategy has been elaborated within the framework of the Code of Conduct for Responsible Fisheries. This has taken into account the processes undertaken, resulting in strategy for improving information on status and trends of Capture Fisheries, which was formally accepted by the FAO Committee on Fisheries in February, 2003.

The strategy applies to the assembly on dissemination of information on the status and trends of Fisheries and Aquaculture. FAO (2007) reveals that the publication of commercial journals is determined by economic considerations - whether there is a profitable market for them. In contrast, much of the Fisheries information published in developing countries primarily fulfils the mandate of the originating organization. This poses the challenges of defining the intended audience and how best to communicate the information. The target audience for many Fisheries publications includes a wide spectrum of society: managers and policy makers; researchers, academics and educators; resource users and industry; non-governmental,

governmental and international organizations; fishing communities and fish workers; civil society and the media. The target audience is the key determining factor for how the information is packaged, its language, level and format. The target audience is also a complex and ever-changing aspect of information provision that shapes how information is disseminated and accessed.

In spite of the foregoing, however, Ibeun (2004) presents some international sources of Fisheries information which are available for the enhancement of fish production, poverty alleviation and food security in Nigeria. The sources include the following and they can be accessed at the websites as presented:

i. Aquatic Sciences and Fisheries Abstracts (ASFA) (www.fao.org/fi/asfa.asp)

The ASFA database was set up in 1970 by FAO with the co-operation of a commercial publisher and several national centres in order to provide an information system, facilitating access to world literature in Aquatic Sciences and Fisheries. Overwhelmingly cited by a majority of aquatic science librarians as their primary database, the ASFA series is the premier reference in the field of aquatic resources. Input to ASFA is provided by a growing international network of information centres monitoring over 5,000 serial publications, books, reports, conference proceedings, translations and limited distribution literature.

It has established national centres responsible for inputting bibliographic data on Fisheries and related disciplines emanating from the participating countries into the main ASFA database. The library of National Institute for Freshwater Fisheries Research (NIFFR), New Bussa was granted the status of ASFA national input centre in 2004 thus registering Nigeria on ASFA list for the first time. The library has been sending inputs to the database since then. Appendix VII is a list of Nigerian journals presently covered by ASFA through the input of NIFFR library.

ii. **Access to Global Online Research in Agriculture (AGORA) (agora @fao.org), www.aginternetwork.org)**

The AGORA programme set up by the Food and Agriculture Organisation of the United Nations (FAO) together with major publishers, enables developing countries to gain access to an outstanding digital library collection in the fields of food, agriculture, environmental science and related social sciences. It provides a collection of 1900 journals to institutions in 107 countries. It is designed to enhance scholarship of the many thousands of students, faculty and researchers in Agriculture and Life Sciences in the developing world.

The goal of the AGORA programme is to increase the quality and effectiveness of agricultural research and training in low income countries and in turn to improve food security. It provides access through the world-wide web to a research level collection of about 1900 journals in Agriculture and related Biological, Environmental and Social Sciences to the poorest countries of the world. AGORA offers researchers, policy makers, educators, students, technical workers and extension specialists a collection of literature comparable to that available to their counterparts in the developed world.

According to Ibeun (2004), out of the 500 journals currently covered by Agora, over 50 are core Fisheries and Aquatic Sciences titles which include: Aquaculture Engineering, Aquaculture, Aquaculture International, Aquaculture Nutrition, Aquaculture Research, Fish and Shell Fish Immunology, Journal of Fish Diseases. These journals and many others can be viewed at http://www.aginternetwork.org/

iii. **FAO, Fisheries Branch Library** (www.fao.org/fi/library/jou.free.intm)

The FAO library collection includes almost 1,000 current fisheries journals, many of which are not available commercially. Most of these publications are indexed for inclusion in ASFA. Thus, in addition to the journals provided via AGORA, the fisheries library maintains a directory of fisheries related online journals available full-text, free of charge at www.fao.org/fi/library/jou.free.intm

The following sources are also recommended by Ibeun (2004) for fisheries scientists: Directory of open Access Journals (DOAJ) (www.doaj.org/), Fish Base (www.fishbase.org), International Association of Aquatic and Marine Science Libraries and Information Centres (IAMSLIC). (www.iamslic.org), International Network for the Availability of Scientific Publications (INASP) (www.inasp.info.org), INASP – Programme for the Enhancement of Research Information (INASP – PERI) (www.inasp.org.uk/ajol), INASP – African Journals on-line (INASP – AJOL) (www.inasp.org.uk/ajol), Ocean Data and Information Network for African (ODINAFRICA)(www.oic.unesco.org.odinafrica), Support Unit for International Fisheries and Aquatic Research (SIFAR) (www. sifar.org), World Aquaculture Society programme (WAS) (www.was.org), World fish centre (formerly ICLARM) (www.worldfish center.org), Aquatic Biology, Aquaculture and Fisheries Resources (ABAFR) (nisc@ru.ac.za).

Apart from these foreign based fisheries information sources, there is available, a local source which is a good information source for Nigerian Fisheries scientists. This is the Nigerian Fisheries and Aquatic Sciences Database which is a special collection of the Library, Information and Documentation Division of the National Institute for Freshwater Fisheries Research (NIFFR), New Bussa.

The database which started in 1986 is a special collection of literature on Nigerian Fisheries and Aquatic sciences. It acquires both current and retrospective literature on Nigerian Fisheries and related disciplines and indexes them for ease of retrieval; it produces Nigerian Fisheries and Aquatic Sciences Abstracts to create awareness for collections in the database. The abstract is presently in its twelfth edition.

2.4 ICT Use in Information Provision and Library Services

Access to library and information services has moved beyond geographical location and time constraints which are characteristic of the traditional library services. Information and Communications Technology has made it possible to provide a variety of information and knowledge sources and services in a manner that

is simple, easy and independent of time, place and subject disciplines. Omekwu and Echezona (2008) stressed that library services are now in cyberspace and are not affected by time of opening and closing hours. Discussing the importance of web resources, Ogunsola (2004) asserted that they are organised in such a way that users can easily move from one information resource to another without much stress as is the case with manual method of accessing information which posed some difficulties. In agreement with the assertion, Adeniji, Adeniji and Oguniyi (2010) informed that the evolution of ICT has also led to digital realities where information resources are now digitalised as is manifested in e-book, e-journal, e-purchase, e-commerce and face book which are common in the western world. Information provision and library services have been revolutionised by developments in ICTs such that libraries do not have to rely upon their library collection alone in meeting the information needs of their users.

ICT is heavily utilized in the storage, processing and dissemination of information. It has made the organisation of information very efficient, the delivery of basic information services more effective and dissemination of information to users easier. It has eliminated a lot of routine and repetitive tasks in libraries. Any modern library and information professional must be knowledgeable in library automation, networking, internet surfing , database management, software processing etc in order to provide customised information to the user in meeting his information needs and providing adequate services.

Emphasis has presently shifted from availability of information resources to access. Irechukwu (2007) noted that gone are the days when libraries were described as information centres where books are preserved for reading and reference purposes only. Libraries today lay more emphasis on information provision that is available on the World Wide Web. Omagbemi, Akintola and Olayiwola (2004) opined that ICTs have added another role to the work of librarians by providing access to a few copies of textbooks available in the library to its teeming users and complementing this through ICTs to provide more than enough resources for users to meet their

information needs. In the opinion of Nkanu and Okon (2010) the internet is now the dominant mode of information exchange in libraries in the digital age. It is no longer a luxury but a necessity which Nigerian libraries must accept and adopt to close the digital gap. In the same vein, use of ICT by fisheries libraries in Nigeria is highly necessary so as to facilitate provision of fisheries information to the fisheries scientists. Effective decision making for integrated fisheries and natural resource management requires accurate and timely information. MRAG Asia Pacific-Marine Resources have developed considerable expertise in data and information management through the design and implementation of numerous information systems for fisheries and environmental resources. Indeed information technology underpins so much of MRAG's work that a specific business unit has been created –MRAG IT-to service the information technology needs of each project. Nigerian fisheries libraries can take a cue from MRAG IT project to ensure adequate provision of fisheries information to fisheries scientists in Nigeria.

In line with the findings of studies such as Ojo-Ade & Jagboro (2000), Okiy (2000), Popoola (2002) and Kemani (2002); Haneefa (2007) reports a case of under utilization of the ICT based resources and services in satisfying the diverse information needs of the library users. This has been a cause of concern to librarians worldwide. He, however, reported that special libraries are switching over to ICT based resources and services at an accelerated pace. E-journals, CD-ROM databases, online databases, e-books, web based resources and a variety of other electronic resources are fast replacing the traditional resources of special libraries.

Sharma (1999) presents the results of a case study on the role played by ICT in special library environment in India. The paper discussed in detail, the various library activities and services where Defence Science Library had used ICT to provide better and enhanced resources and services. In the present era, new information and communication technologies are used to perform library functions. According to Asamoh-Hassan (2003), the librarian today is seen as an information resource provider, a resource centre manager, a human gateway to electronic resources, and a

walking encyclopaedia of quick reference sources. This transformation, the author suggests, is due to the fact that the librarian is able to use sophisticated gadgets operated in a modern era where libraries are not limited by walls; and where, with the touch of a mouse, he can access necessary information from anywhere in the world.

Moorthy and Karisiddappa (2001) in their study to assess the information infrastructure and use of electronic media in Indian libraries found that a good number of libraries were subscribing to CD-ROM databases and were willing to migrate to online journals to satisfy the demands of their users. Ali (2004) in his study discussed the need of training for library professionals to make use of the ICT based resources and services optimally. The study conducted by Hewitson (2002) showed a direct link between electronic information resource use and perceived information technology competency. In another study the author found that the internet was the most widely used service and electronic indexes, abstracts and electronic journals were not heavily used. Vicente et al (2004) reported results of a study on the use of electronic information services by staff at Glasgow Caledonian University. They also found that the freely available internet was the most widely used source, which some respondents viewed as a more appropriate source of vocationally oriented information than passworded databases. They stated that the non-use of electronic information sources was rare due to difficulty of access or use. Adams and Bonk (1995) found that the most common barriers in the use of electronic information resources were lack of sufficient resources, the absence of information about specific resources and lack of training. Rehman and Ramzy (2004) investigated the use of electronic information resources at the Health Science Centre of Kuwait University and found that time constraints, lack of awareness and low skill levels were among the primary constraints in the use of electronic information resources in Libraries.

2.5 Adequacy of Library Resources and Services

Existing literature such as Udoudoh (2009), Popoola (2008) and Hanif, Zabed Ahmed and Nasir (1997) suggest that the library is central to the provision of relevant

information resources and services for adequate support of teaching, learning and research in any academic environment. The information resources and services provided by academic and research libraries are therefore expected to be able to adequately support the activities of the parent institutions.

According to Bassey (2006), to be most functional, the resources and services of any library should correspond with the needs of its users because the user is the very reason for the existence of the library. This will also make it possible for the services provided by the library to be maximally exploited. To determine whether the objectives of the library are met, the author suggests that the views, opinions and perception of the library users should be sought. In other words, any library that wants to improve its resources and services must solicit the help of its users to identify areas of weakness or inadequacy in order to improve upon them.

On the adequacy of library resources and services, Aguolu and Aguolu (2002) shows that it is the size of a collection, combined with its quality that ensures its adequacy. The adequacy of any collection has both qualitative and quantitative dimensions. Olajide and Fabunmi (2011) opine that the extent to which library resources and services satisfy the needs of users determines how effective and efficient a particular library is. The authors suggest that users' perception, which is a way a user forms impression of and makes inferences about library resources, services and personnel in terms of meeting their expectations, should be used to measure library performance. This is because, according to Aina (2004), user is critical to the practice of librarianship and all processes in the profession revolve round the user.

Excerpts from the Northwest Association of Schools and Colleges accreditation handbook, 1999 edition states that the primary purpose of library and information resources is to support teaching, learning and if applicable, research in ways consistent with, and supportive of, the institutions mission and goals. Adequate library and information resources and services, at the appropriate level for degrees offered, are available to support the intellectual, cultural and technical development of students enrolled in courses and programmes wherever located and however delivered.

The institutions information resources and services include sufficient holdings, equipment and personnel in all of its libraries. Library and information resources and services are organised to support the accomplishment of institutional mission and goals. Organisational managements recognise the need for service linkage among complementary resource bases.

In the opinion of Mallaiah, Kumbar and Patil (2008), the value of the library collection depends not only on the quantity of information sources but on the effective ways and means of providing and interpreting them to users. The artificial techniques followed in the library activities are not common to the users hence these should be interpreted in the easy understandable ways. This is because university libraries have shifted from the old notion of being the custodians of books to that of being the disseminators of knowledge and information. For library and information professionals to be effective as information providers, Bello and Musa (2005) suggest they require a fuller knowledge of students' information needs, the characteristics of needed materials, the context of research process in which information needs occur, how information is used and when information needs have been met.

According to Hanif, Zabed Ahmed and Nasir (1997), a good library, well equipped with books and periodicals in all subjects is essential for advanced study and research. The role of a university library, as regards these functions, is unique. It collects, organises and disseminates information to the faculty members, research scholars and students and support the generation of new knowledge. The up-to-datedness of contents in courses, the continuous academic growth and competence of faculty members and the quality of learning environment depend on how effective the academic library is in identifying and collecting information on current developments in various subject fields with the concerned academic community.

Hanif et al stressed further that:

> In order to satisfy the diverse information needs and interests of the academic community, the library collection must be adequate in terms of quantity, quality and currency. The collection must also be accessible to the community. The provision of quality information will invariably have positive impact on the learning environment. On the contrary, if the quality of the information provided leaves much to be desired, the result would be worse.

The study found that there is inadequacy of recent publications and current journals; furthermore, the information needs of the faculty members are not adequately met by the existing library services.

However, another study (Zainab, 2001) assessed the adequacy of library resources and services available to 56 scientists and engineers in a Malaysian university and found that between 46-55% of the respondents felt their library resources and services to be fairly adequate for their research needs. Among the scientists, only one indicated not using the library and six regarded their library resources as not adequate at all times when they needed them. The study hinted that the highly productive scientists indicated the following situations as problematic for them when searching information needed for research: no help in finding information, not finding relevant information, receiving information too late and not knowing how to choose relevant databases. This indicates that even the productive scientists do need help in obtaining information and it means that much is still desired in the existing information resources and services available to them.

2.6 Use of the Library and Publication Output

The library is the nerve centre of academic activities in any academic environment since every research endeavour begins and ends up in the library. Library use, therefore, is an important factor in determining the effectiveness of the library in meeting the user needs for research and publications. Awojobi and Madu (2005) opine that the knowledge of the level and extent of use of any library is seen as a vital

feedback information on service delivery in response to user needs and preferences. This knowledge is considered an important factor in the management of libraries where information is packaged in various formats to the advantage of the users. Onwubiko (2005) asserts that the library within the university today is user-centred as a result of the provision of ICT facilities. Similarly, Haneefa (2007) asserts that Information and Communication Technologies (ICTs) are being increasingly used in library and information services for the acquisition, processing and dissemination of information. According to the publication, libraries and information centres have been using ICT based resources and services to satisfy the diverse information needs of their users. However, these resources and services are not utilized fully. Underutilization of these resources and services has been a cause of concern to librarians worldwide. The use of information and communication technologies has become increasingly important especially in special libraries. Special libraries are switching over to ICT based resources and services at an accelerated pace. E-journals, CD-ROM databases, online databases, e-books, web based resources and a variety of other electronic resources are fast replacing the traditional resources of specials libraries.

Assessing the effectiveness of the research institute libraries in Nigeria, Ezeala and Nwalo (2011), posit that it is only when the research library meets the user needs for research and publication that it can be said to be effective. The most popular way to determine effectiveness, according to the publication, is by performance assessment of the libraries by user approach. Jimba (2000) also noted that for a library to be sure that it is carrying out its mandate to its users, the totality of the features and characteristics of its resources and services must be able to satisfy all users' stated or implied needs.

An evaluation of library effectiveness is an evaluation of user satisfaction. Such an evaluation should determine how well an information service satisfies the needs of its users (Lancaster, 1978). Published literature in Library and Information Science reveal that numerous studies have been conducted on academics' use of library resources and

services to enhance research performance. Very few studies, however, have investigated how library use has improved academic performance and specifically how it has contributed to faculty publication output. A number of early studies indicate that library use did not influence the work of various professional groups (Friendlander, 1973; Nicholas, Erbach & Paalman (1987). Contrary to that, Baldwin and Rice (1997) found that heavier library use was related to work productivity among security analysts. Hughes (1999) also found a correlation between access to research resources, supportive telecommunication environment and information professionals with high academic publishing productivity.

Zainab (2001) compared the perceived adequacy of library resources for research as well as the type of resources used, with publication productivity of selected Malaysian academic engineers and scientists.The study reported that scientists who used varied methods to keep themselves up-to-date with current research literature are highly productive. It also suggests that the methods used to keep abreast of research information should reflect the ability of the users to effectively identity useful sources. This factor should indirectly stimulate research and result in better publication productivity. This information was sought out to ascertain the extent to which academics use library resources to keep abreast of information. The results revealed that academic staff in the study generally keep abreast of information by attending conferences, professional meetings and browsing the current periodical shelves. Other methods rated highly by the academics are subscribing to journals, browsing abstracts and indexes in their fields of research, talking to colleagues within their department and contacting others working in the same fields. Scientists, however, found browsing through the internet and through special bibliographies in their own subject areas fairly useful. They indicated that browsing the library's online catalogue and publisher's catalogues were not useful or not used. It is pertinent to note, however, the position of some studies such as Neclameghan (1985) and Uhegbu (2001) that use of information resources and services depend on the purpose of use, the user's characteristics, the environment in which information is being used, medium

of communication, quality of information infrastructural facilities and equipment, cost of acquisition and time. These factors therefore determine the level of use of library and information services by fisheries scientists and how much this can influence their publications output. Existing literature has sufficiently shown that there is a strong relationship between use of the library and publications output.

2.7 Library Services and Research Productivity

Mallaiah, Kumbar and Patil (2008) analysed the main tasks of a library to include collection, storage and distribution of reading materials, keeping in view, the user requirements. Out of these three, the collection occupies the most vital position. The efficiency of a library is determined by the quantity and quality of its collection. Library collection is expected, therefore, to enhance the efficiency of the library in providing services with a view to satisfying its user needs. Furthermore, Mallaiah,Kumba and Mudhol (2008) suggest that a university (tertiary) library occupies the central and primary place in teaching and research, therefore it has to meet the diverse and growing needs of educational programmes at the undergraduate, post graduate and research levels. Every tertiary library, including university library is expected to meet the objectives of the institution that established and funds it. Similarly, Aina (2004) presents a library as being concerned with the collection, processing, storage and dissemination of recorded information for the purpose of reading and consultation. Additionally, the author posits that the library is a learning centre which provides materials that are needed for learning all the courses offered in the university as well as potential courses that may be offered.

Productivity of researchers is mainly determined by their research output. Sulo, Kendagor, Kosgei, Tuitock and Chelangat (2012) assert that the importance of research to a university cannot be overemphasized. It leads to generation of new knowledge, engenders innovations, enhances the quality of teaching staff, increases an institution's reputation and its economic status. According to the authors, there has, however, been a low level of research productivity and dwindling participation in

research activities by academic staff in their case study, Moi University, Eldoret, Kenya. This captures the situation in many African universities and research centres.

Popoola (2008) posits that one of the critical factors used in determining academic productivity is research output. The research output of the fisheries scientists will be greatly enhanced if they are adequately provided with relevant library services. However, perceptions from existing literature such as Verma (1988) and Igbeka (1995) show that the services are not adequately provided thus leading to the scientists' reliance on sources other than institutional libraries for meeting their information needs. According to the former, the problem of low publications output among agricultural researchers could be attributed to lack of effective library services. The later found out that agricultural research libraries and university libraries in Nigeria lack adequate resources for the researchers in Agriculture. Dizon and Sadorra (1995) measured the scientific productivity of 105 BS, MS and PhD degree holders at their institution, a non-profit international fisheries research organization based in Manila. They found out that the staff output of conference papers and technical reports outweighed contributions to the primary (journal) literature. They reported that predictions of productivity were position/salary, education and age. However, a large unexplained variance remained, suggesting that individual factors largely determine productivity.

Roberts (1980) posits that social scientists use information resources far less than those in the sciences. However scientists in developing countries are usually faced with problems of inadequate current library materials, inefficient provision of information services, poor searching skill, and poor knowledge of existing information products and services in the library. Tyagi (1994) points out that the problem is compounded when indigenous information resources in developing countries are not well known. In another development, Haladu (1989) emphasises the importance of both formal and informal information exchange. This brings into focus, the use of the library resources and services by the academics and researchers.

Previous studies in the 1970's have indicated attempts by major research libraries to analyse the extent to which their collection and services supported research. Among the methods used were monitoring circulation patterns, user population, academic staff's time expended on the various activities and library space utilization. It was assumed that academic staff make heavier use of library resources than undergraduate students. Soper (1976) observed that academic researchers used documents, which were most convenient, and therefore, gave high rating to the use of their personal collection. Hernen (1979) reported that the social scientists made heavy use of research and technical reports. White (1975) stated that academic economists needed to gather more information sources during their "methodology stage" (second stage) rather than the "problem stage" (first state) or "presentation stage" (third stage) of research. In a related study, Baughman (1983) also observed that academics reported heaviest use of library resources during the "project research stage" not at the "proposal development stage". The former stage was augmented with the use of other research libraries, purchasing items that were important and taking advantage of the inter-library loan services. This dependence on neighbouring research collections and inter-library loans was also indicated by Startup (1979) who interviewed academics from four universities in Wales. He observed that academics in the arts discipline found that their university library could not meet their research needs adequately and proposed that good inter-library loan services would make up for these deficiencies.

Studies on information usage behaviour of engineers indicated that they used bibliographic databases mainly to define or redefine research problems (Schuchman (1981), Kaufman (1983), Pinelli, Kennedy and Barclay, (1990). In an Australian study, Hiscock (1986) found that previous experience in the use of library bibliographic tools and the catalogue helped undergraduates to obtain relevant texts that have not been recommended by their lecturers. These factors bear significant relationship to the student's academic performances. It is unclear, however, whether this relationship also exists for academics who are adept at using the library services and sources for their research information needs.

Previous studies have highlighted the types of materials academics used for their research information needs. Lonnquist (1990), studied the information seeking behaviour of scholars in the humanities, and observed that journals were used to supply research news, present new literature, read book reviews and obtain related articles needed in the chaining process. Lorenz (1973) found that users of the university of Nebraska library perceived a high need for photocopying services in the periodical library. Academics generally perceived the library services as essential but often admitted that they used them infrequently. This low usage could be due to ignorance as academics might be aware of only some of the services actually available.

Budd (1995) suggests that the output of research, such as publishing activity of academics or the number of doctorates produced, have been compared with certain key library-related variables. These include the total number of volumes held by the university libraries, the libraries' total expenditure, materials expenditure and the number of professional staff employed. Since these variables benefit the academic staff, they are considered as inputs in the research process. Budd compared the variables with the total number of doctorates produced by selected American universities in 1992. The results indicated, among others, that the total raw publication counts of the universities were related to the number of volumes held in libraries. He, however, cautioned about the danger of taking the results too seriously, since there is no evidence that any causal relationship exist between the variables.

Zainab (2001) hints that when an academic institution boasts of its ability to provide academic excellence, the quality and extensiveness of its library service and resources to support teaching, learning and research, are among the situations often highlighted. It is, however, difficult to indicate how the library actually helps to further student, courses and academic progress. The exact nature of the relationship between usage of libraries and academic performance is not clear. However, it is assumed that academic staff knows which formal channels are most useful in meeting their research information needs. Formal channels are institutional based resources

such as journals, books, conference proceedings, library catalogues, indexes, abstracts, the internet and bookstores.

The study further hinted that the use of libraries is foreseen to change in future, especially in the provision of access to online databases, both bibliographic and full-text, right to the academics' desks. There are evidences which indicate that academics are readily using online databases made available by their libraries. Curtis, Weller and Hurd (1997) found that academic staff preferred to access electronic databases from their offices to doing so from the library. This has serious implication for the libraries who are expected to prove their relevance and by so to justify their existence in the academic community.

Hughes and Lee (1998) suggest that the improvements in communication network have made it possible to improve access to information resources and services. An automated inter-library loan services, which allows academic staff to submit requests and receive feedback online would reduce time in walking to the library to fill forms for every item requested. Current awareness portals could be linked to the library home pages and on-line catalogues, which contain special subject bibliographies that are current, or content pages of journals subscribed to by the library in the discipline of Science and Engineering. The authors declared a marked increase in the usage of full text databases compared with the citation versions, when access to journal databases was made available at the Pennsylvania State University in 1995. Such system should be designed for the heavy, as well as the average users, with functions that minimize the client's effort when obtaining information. The system should empower academics to browse contents of scholarly works, order needed information and receive feedback on-line from their workplace at any time. This would place the library as a dynamic content provider for the promotion and advancement of a knowledge rich scholarly environment.

2.8 Publication Output as Measure of Research Productivity

Publication output is an acceptable criterion for assessing academic productivity. By far, the most commonly used measure of individual and departmental research productivity is the number of faculty publications in selected out lets such as academic journals (Baird, 1986, 1991), Creamer, 1998; de Groot et al; 1991; Dundar and Lewis, 1998; Fox, 1992; Golden and Carsten, 1992, Johnes and Johnes, 1995; Jordan, Meadar and Walters, 1988; Porter and Bach, 2001. Also used is a summative index constructed from counts of conference papers, journal publications and books (Bellas and Toukoushian, 1999; Buchmeller, Dominits and Hansen, 1999 Noser, Manakyan and Tanner, 1996). It has become quite common for researchers to rank departments within a specific field on the basis of either total publications (Bell and Seater, 1978, Borokhovich, Bricker, Brunarski and Simkins, 1995).

Wood (1995) asserts that increasingly, publication output is being seen and used as an indicator of academic quality. The article argues that in the case of Hospitality Management Studies, the criteria employed in research to date to measure academic output are inadequate or incomplete. Suggested ways of ameliorating this situation include using publication counts as a measure of productivity. In his review of literature on assessment efforts in higher education, Tan (1986) noted that assessments of individuals and departmental research accomplishments are most often based at least in part on the number of publications produced over a specific time period. He was critical of these studies for focusing almost exclusively on faculty research productivity and neglecting other aspects of quality. The most commonly used measure of individual and departmental productivity is the number of faculty publications in selected outlets such as academic journals or summative index constructed from counts of conference papers, journal publications and books. Usually, these are limited to a specific period of time and are not adjusted for prestige of publication source or multiple authorships.

Studies focusing on publication counts have, however, been criticized because they vary across disciplines due to the nature of the work being performed and the conventions for communicating research. They do not take into consideration the quality of research, except to the extent that it has passed through peer review. In conrast, Zheng and Stewart (2002) use data on faculty publications, citations and research dollars awarded to rank public research universities using data development analysis. Their analysis relies on a causal model to predict research output; and institutions are then ranked according to their efficiency in producing output. According to Cohn et al (1989), institutional level research studies, institutional rankings and performance indicator systems rarely if ever utilize information on research publications even though the literature on individual and departmental productivity clearly suggests that they should matter. The problem he points out is majorly that data on institution level research productivity has been difficult to obtain.

For ease of measuring an institution's publication productivity, Toutkoushian et al (2003) suggest the use of the science citation Index, the social science citation index and the Arts and Humanities index. According to the authors, while these indexes are most often used for tracking the citations accrued to specific publications, they also function as a database for articles published in specific journals. The three indexes do not include all academic journals in each field, but are fairly comprehensive in their coverage. Together, they include more than 6,600 scholarly journals in over 200 academic disciplines. Many institution libraries receive annual editions of the citation indexes in CD-ROM format, and other institutions subscribe to an on-line version of the databases.

Communication of Agricultural Scientific and Technical information is one of the most important aspects of Agricultural research, for it is the process that leads to its widespread use and ultimate benefits (Cai and O'keefe, 1993).

Similarly, Bertin, Vacari, Simao and Visoli (2008) assert that Agricultural research output have now been considered a fundamental element for Science and Technology (S&T) planning in developing countries. Furthermore, Agricultural Science appears as

the most important national contribution to global scientific production in developing countries. Aina (2002) hinted that research is generally not regarded as complete until it is disseminated widely.

> The need to document all the stages involved in research is crucial. The purpose is mainly to disseminate the findings so that the researcher's peers can adjudge the research as well as being aware of the contribution of the research to knowledge. There are varieties of ways of disseminating the findings. Some of the methods used include conference, workshops, seminars, annual reports, technical reports, theses and dissertations, books or chapters in books and journal articles or even web publishing.

These are the major ways to disseminate Agricultural research information to other scientists, extension workers, educators, farmers and administrators. According to Martin and Irvine (1993), the number of publications is considered to be an indication of the scientific output of a group, while the impact is assessed by using data regarding to the number of times these publications are cited in subsequent years. They further suggest that some Nigerian universities try to subsidize departmental faculty publications in order to encourage research because an unpublished complete research work that is inaccessible is useless. In order to maintain high academic standards and avoid unnecessary proliferation of scholarly journals, some universities such as University of Lagos and University of Maiduguri have set criteria that faculties must meet to earn subsidies for publishing their journals, books or monographs.

Aguolu and Aguolu (2002) opine that a learned journal should be established only with adequate financial support, with clearly defined objectives and with regard to other journals in the same field that may have identical purpose. A journal should not merely serve as springboard for intellectual barter whereby its editor and editorial advisers and those of other journals ensure that their papers are mutually published in one another's journals. This "editorial doctoring" has created a bad name for many

professional journals in Nigeria, which accept some papers for publication without the required editorial consideration.

This practice leads merely to paper inflation and not to "information explosion", because much of what is published under the aegis of the "publish or perish" syndrome adds nothing to the growth of knowledge. It is often marginally relevant, if at all, to researchers, and duplicative in content. These authors further point out that irregular publication and uncertain continuity haunt all Nigerian academic journals. These two factors, they say, discourage many academic and research libraries in the developed countries from subscribing to African Journals, since the journals might cease publication after volume 1, number 1.

Aguolu & Aguolu (2002) suggest that the indexing and abstracting organizations are also frequently reluctant to include these academic journals in their bibliographic services for the same reasons. The ongoing factor, according to the authors, has also contributed to the general book famine in Nigeria. The situation in the country as in other African countries is now being portrayed as being more insidious than Africa's perennial food crises. It could blight the future of the African continent in a way that a more obviously quickly remediable shortage of food will not. This has led to the intellectual starvation of researchers and scholars in form of scarcity of books and journals. Even when the researchers and scholars manage to complete their research against these odds, many of them find it difficult to get their work published. Much of their research results lie unpublished and even when they eventually succeed in publishing some of them in the local or foreign journals, they rarely reach their institution libraries whose budget has been drastically cut, with consequent cancellations of most of their journal subscriptions.

Jimba (2000) opined that despite the great odds against scholarly publishing in Nigeria, the Nigerian fisheries scientists, like other scholars and researchers are faced with the 'publish or perish' challenges, whereby, they are expected to meet certain publication requirements for promotion in their institutions. Some scientists get

stagnated at certain points in their progression as a result of their inability to meet these requirements.

Although publication output has been established in literature as a measure of productivity of scientists, standard or acceptable number is not specified.

However, the scheme of service of various institutions employing fisheries scientists stipulates the number of various types of publications required for job progression and promotion from one level to another. For example, the scheme of service for Federal Research Institutes, Colleges of Agriculture and Allied Institutions in Nigeria requires of a senior research officer to be promoted to principal research officer, five conference/seminar papers in the minimum. For a principal research officer to be promoted to chief research officer, it requires seven reputable journal publications and eight conference/seminar papers. For a chief research officer to be promoted to assistant director research; the minimum requirement is ten reputable journal publications and twelve conference/seminar papers. For an assistant director research to be promoted to director, research it requires, in the minimum, fifteen reputable journal publications and fifteen conference/seminar papers.

For a lecturer grade 1 to be promoted to a senior lecturer, the minimum publications requirement is five journal publications eight conference/seminar papers and not less than two meaningful chapter contribution in standard textbook(s). To be promoted to a principal lecturer, the minimum publication requirement is nine journal publications, four chapters contributed in standard textbooks or one standard textbook published and twelve conference/seminar papers. To be promoted to chief lecturer, a minimum of thirteen journal publications (at least four since last promotion), three papers in national/international conference proceedings or seminar since last promotion, not less than four meaningful chapters contribution in standard textbook(s) or two standard textbooks.

Number of publication output is therefore an acceptable measure of productivity of fisheries scientists in Nigeria.

2.9 Theoretical Framework

The following theories are relevant to the study in different ways: Information Richness Theory, Information Utility Theory and Sense-Making Theory.

2.9.1 Information Richness Theory

Information Richness Theory was propounded by Daft and Lengel (1984). It is a framework to describe a communication medium by its ability to reproduce the information sent over it. It was developed by Richard L. Daft and Robert H. Lengel, and it is used to rank and evaluate the richness of certain communication mediums, such as phone calls, video conferencing and mails. For example, a phone call cannot reproduce visual social cues such as gestures, so it is a less rich communication medium than video conferencing, which allows users to communicate gestures to some extent. Specifically, information richness theory states that the more ambiguous and uncertain a task is, the richer the format of media that suits it. Based on contingency theory and information processing theory, it explains that richer personal communication means are generally more effective for communication of equivocal issues than leaner, less rich media. The advent and widespread use of information technologies have broadened the menu of available media beyond the letter and the phone call. Communicating effectively, therefore, requires a choice of the medium that is appropriate to one's communication objective.

Information Richness Theory provides a guide in choosing the medium that fits the task. The theory states that there are enormous information sources and information exists in various formats such as oral, written, visual and electronic devices. Some of the sources that are available to users are more information rich than others. It implies that high quality information can satisfy the needs of the user. It is relevant to the problem at hand of the user.

Daft and Lengel (1984); Daft et al (1987), introduced an approach considering information richness as a major factor in information processing and media selection by managers. They defined information richness as the 'potential information carrying

capacity of data" and stated that the medium used in communicating determines the potential richness of the information processed, and thereby the effect of a communication act. It is suggested that media differs in their potential capacity of transmitting the meaning of information in four information-richness factors, so that they can be ranked from 'rich' to 'lean'.

Information Richness Theory is relevant to the study in the sense that fisheries research libraries need to put together a stock of information rich resources in various formats (print, non-print and electronic). They also need to offer services that will make the fisheries scientists to be able to utilise the resources thereby impacting on their productivity (publications output).

Such services include provision of information rich resources, bringing the availability of such resources to the awareness of the fisheries scientists and making such resources accessible to the scientists. Information richness is considered on the basis of the information content relevance, authority of the information content, recency and timeliness of the information delivery.

2.9.2 Information Utility Theory

Utility theory is interested in people's preferences or values and with assumptions about a person's preferences that enable them to be represented in a numerically useful ways. On the practical level, utility theory is concerned with people's choices and decisions. It is concerned also with people's preferences and with judgements of preferability, worth, value, goodness or any of a number of similar concepts. It states that a user will keep on demanding and using an information source, provided that he derives maximum satisfaction from its use, or that the source meets his need. Information Utility Theory is the bedrock of collection development. (It guides acquisition librarian to buy more of useful titles, while discarding or weeding those that are no longer useful to the users).

Information utility theory is a fundamental concept in the discourse of information seeking and use behaviour. It has various aspects but the aspect of focus in the study is that of information utilisation. Bertram Brookes' fundamental equation of information science as reviewed by Todd (1999) provides a theoretical framework

for furthering our understanding of the cognitive aspects of information utilisation. Ford (1986) presents models of what is to satisfy an information need. Educational models have emphasised users' introspective perceptions of their own learning needs and processes (freedom) while information scientists have developed models more on the line of a tutorial exchange (authority) in which information is presented to the information seeker not only in response to his stated need but also on the basis of relatively more extensive and objective assessments of the relationship between his own cognitive structures and those of the information sources represented in the retrieval system. Methods and problems of representing information, structures of information seekers and information sources using systematically rich vis-a-vis more economical statistical systems are provided. Implications are drawn for user education, in particular, the need for the development of individuals' 'meta-retrieval' skills.

Information utility theory has relevance to this study in the sense that fisheries research librarians must ensure adequate education of their users especially in acquiring the skills necessary for utilising the resources and services provided by them.

2.9.3 Sense Making Theory

Sense Making Theory was propounded by Dervin & Nilan (1986). The Sense-making Theory, according to Savolainen (1992) refers to a theoretical net, a set of assumptions and propositions, and a set of methods which have been developed to study the making of sense that people do in their everyday experiences. It is the process by which individuals (or organisations) create an understanding so that they can act in a principled and informed manner. Sense-making tasks often involve searching for documents that are relevant for a purpose and then extracting and reformulating information so that it can be used. The sense-making approach to studying and understanding users and designing systems to serve their needs has been reviewed by Dervin (1998). The approach, developed to focus on user sense-making and sense-unmaking in the fields of communication and library and information science is reviewed in terms of its implications for knowledge management. Primary emphasis is placed on moving conceptualization of users, information and reality from

the noun-based knowledge-as-map frameworks of the past to verb-based frameworks emphasizing diversity, complexity and sense-making potentials. Knowledge management is described as a field on the precipice of chaos, reaching for a means of emphasizing diversity, complexity and people over centrality, simplicity and technology.

The theory states that, users of information are exposed to numerous information sources or resources that are relevant to their needs, but the users have to make sense out of the intellectual content of those resources. The implication of this is that, the cognitive ability of the users may constrain them from deriving maximum utility from there. The summary of this theory is that the sense-making is at the point of the end-user. This implies that a user considers several materials to get the information he wants, but he needs to select a few useful ones, through cognitive sense before he would be able to identify the titles that are actually needed for his studies.

The relevance of the sense-making theory to the present study lies in the fact that fisheries research libraries are expected to provide a wide range of information sources as fisheries as a discipline is inter-disciplinary. They should also provide a wide range of information services as well as extracting and reformulating the information in a way that it can be easily utilized by the fisheries scientists. This is also in order to afford the fisheries scientists freedom of choice of information resources and services.

2.10 Conceptual Framework

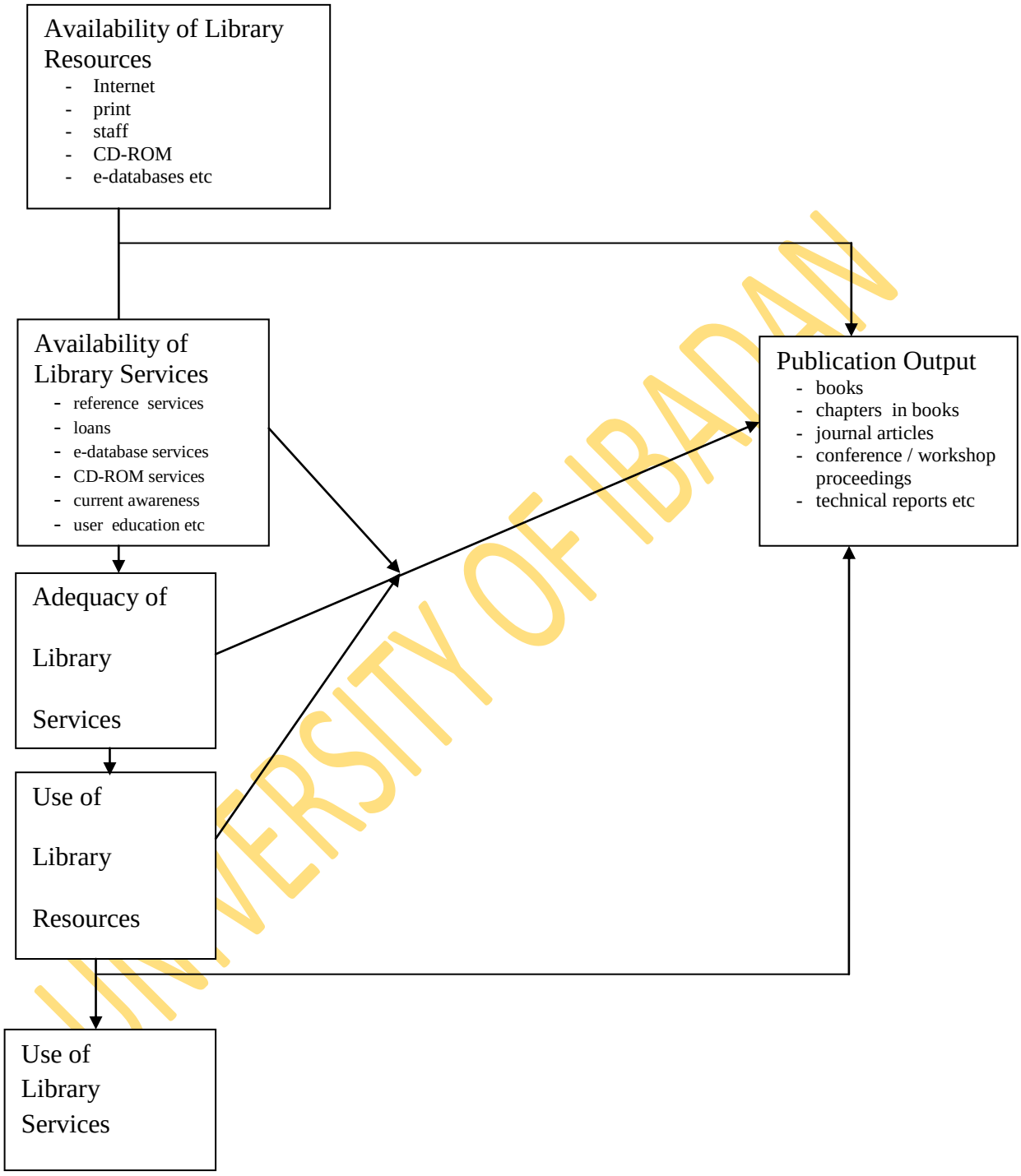

FIG.2.1: Conceptual framework showing the relationship between the independent and the dependent variables (This is an original construct of the researcher).

The model is an original construct developed for the study to explain the relationship between the independent and the dependent variables. Availability of library resources has a direct link with availability of library services because it is from what is available that service is provided. For instance, reference services are provided from reference sources available. Indexing and abstracting services are provided from indexes and abstracts available. Provision of library services by fisheries research libraries from the library resources available brings about increased publications output of the beneficiaries (fisheries scientists).

Adequacy of library services has direct relationship with publications output. If the fisheries research libraries provide adequate library services to the fisheries scientists, it will enhance their publications output.

Use of library resources has a direct link with use of library services. When library resources are used, library services are derived from them. For instance, reference services can be derived from use of available reference materials. Use of the resources and services of the fisheries research libraries by the fisheries scientists brings about their increased publications output.

The model, in summary, shows that availability of library resources and services, adequacy of library services and use of library resources and services translate to enhanced publications output.

2.11 Appraisal of Literature Reviewed

The review of literature relevant to the study has shed light on problems of the diverse and complex nature of fisheries information. This mainly poses great challenges to the fisheries libraries in terms of collection, organisation and dissemination of the information. Literature has examined the level of availability and accessibility of information resources to the fisheries scientists. The review has highlighted important sources of fisheries information and has presented information on means of accessing them. It has also synthesised the need for fisheries scientists to acquire information use skills especially ICT which transverses all forms of modern

library and information services and operations in order for them to obtain greater access to existing library resources and services.

Adequacy of available library resources and services has been examined in the review. It has been established that existing library resources and services are mainly inadequate. Earlier studies have shown that though the library is central to the provision of relevant information resources and services for adequate support of teaching, learning and research in any academic environment, the fisheries libraries in developing countries, particularly Nigeria, have not played this role adequately. This trend obviously has far-reaching effect on the publications output of the fisheries scientists in Nigeria. Existing literature reviewed has sufficiently shown that there is a strong relationship between use of the library and publications output. It has also established that the problem of low publications output among agricultural researchers in Nigeria could be attributed to lack of effective library services. The review has examined different theories that are relevant to the study. These include information richness theory, information utilisation theory, and sense making theory.

Literature reviewed has shown that publications output is an acceptable criteria for assessing academic productivity of fisheries scientists but acceptable numbers are not recommended. Previous studies reviewed have shed light on the relationship between library resources and services and their effect on the users' productivity in terms of their research output. However, none of the literature reviewed sought to determine the composite influence of availability of library resources, adequacy of library services and their use on publications output of fisheries scientists in Nigeria. This is the gap that the present study is expected to fill.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter presents the methodology adopted for this study. Specifically, it covers the research design, variables in the study, population and sampling techniques, research instruments, validity and reliability of instruments, data collection procedure and method of data analysis.

3.2 Research Design

The study adopted the descriptive research design. It is descriptive in the sense that it attempts to investigate and report the variables as they already exist. In the data collection approach, the study adopted the survey method in collecting data from respondents in various fisheries research institutes, colleges of fisheries and universities with fisheries departments across Nigeria. In another sense, the study is correlational as its analysis reveals the relationship among the independent variables viz: availability of library resources, availability of library services, adequacy of library services, use of library resources and use of library services and their relationship with fisheries scientists' publications output.

3.3 Variables in the Study

The variables of interest in the study are:

1. Independent Variables: There are five independent variables thus:
   - I. Availability of library resources (Internet, print, staff, CD-ROM, e-databases etc)
   - II. Availability of library services (reference services, loans, e-database services, CD-ROM services, current awareness, user education etc)
   - III. Adequacy of library (services books, chapters in books, journal articles, conference / workshop proceedings, technical reports (etc)
   - IV. Use of library resources and
   - V. Use of library services.

2. Dependent Variable: This is publication output of fisheries scientists in Nigeria.

3.4 Population of the Study

The population of the study comprises fisheries scientists in the fisheries research institutes, colleges of fisheries, and departments of fisheries in Nigerian federal and state universities. The heads of libraries in the institutions also make up the study population.

There are 523 fisheries scientists in the 3 research institutes, 3 colleges of fisheries and 30 federal and state universities in Nigeria that offer fisheries. Out of the total number, 203 are from the 3 fisheries research institutes, 95 are from the 3 fisheries colleges and 225 are from the 30 universities which are spread across the 6 geo-political zones of Nigeria. However, only 18 were selected by ballot from the 30 universities and there are 138 fisheries scientists in the 18 universities selected. Twenty-four heads of libraries of the institutions also form part of the population of the study. Table 3.1 shows the population of the study.

Table 3.1: Population of the Study

The following table presents the number respondents in the study population.

S/N	Strata of Population	Nos. Available	Target Population
1	Fisheries research institutes NIFFR, New Bussa NIOMR, Lagos ARAC, Port-Harcourt	203 98 72 23	203(total enumeration)
2	Colleges of Fisheries FCFFT, New Bussa FCFMT, Lagos FCFFT, Baga	95 42 35 18	95(total enumeration)
3	Universities	225	138
4	Heads of Libraries	36	24
	Total	**559**	**460**

Sources:

1. Ibeun, M.O. (2001). Directory of human resources in Nigerian Fisheries and Aquatic Sciences (NIFFR occasional paper 2).
2. Ibeun, M.O.(Unpublished)Directory of Human Resources in Nigerian Fisheries and Aquatic Science – an update.
3. JAMB – Unified Tertiary Matriculation Examination Brochure 2010/2011 Academic Session.

3.5 Sampling Procedure and Study Sample

The multi-stage sampling procedure was used to select sample for the study. First, all the fisheries institutions were stratified into 3, based on the type of institution. The 3 strata are: fisheries research institutes, colleges of fisheries and universities offering fisheries. All the 3 fisheries research institutes as well as all the 3 fisheries colleges were purposively selected (total enumeration). This was done because the primary interest of these institutions is Fisheries. The proportionate stratified random sampling technique was used to select sample from the 30 federal and state universities offering fisheries in Nigeria, relative to the number of universities in each of the 6 geo-political zones. Thus, the sample selected is as follows: South South zone – 5 out of 8, South East – 3 out of 6, South West– 4 out of 7, North Central – 3 out of 5, North East – 2 out of 3, and North/West – 1 out of 1. Table 3.2 shows the number of universities in the study sample according to their agro-ecological zones.

Table 3.2: Number of universities in the study according to geo-political zones

	South South	South East	South West	North Central	North East	North West
Number of Universities	8	6	7	5	3	1
Number Selected	5	3	4	3	2	1
%	62.5%	50%	57.1%	60%	66.7%	100%

The ballot method was used to select the universities that make up the sample for each of the zones. Thus, the universities on Table 3.3 were selected.

The following table presents the universities selected for the study and the number of fisheries scientists in them.

Table 3.3 Selected Universities and numbers of fisheries scientists for the study

Zones	Selected Universities	No of participating fisheries scientists
South/South	University of Port-Harcourt Cross River State University of Technology, Calabar Delta State University, Asaba University of Benin Rivers State University of Science and Technology, P/H	10 7 9 8 5 Total = 39
South/East	Federal University of Technology, Owerri Federal University of Agriculture, Umudike Nnamdi Azikiwe University, Awka	5 8 5 Total = 18
South /West	Federal University of Agriculture, Abeokuta Lagos State University, Ojo University of Ibadan Osun State University, Osogbo	16 5 14 5 Total = 40
North /Central	IBB University, Lapai Federal University of Technology, Minna University of Jos	5 11 6 Total = 21
North /East	University of Maiduguri Federal University of Technology, Yola	8 7 Total = 15
North/West	Uthman Danfodio University, Sokoto	5 Total = 5
		Overall Total = 138

Total Number of selected universities = 18
Total % = 60%
Total number of fisheries scientists from the selected universities = 138
Grand total of fisheries scientists in the study sample = 436
Grand total of librarians in the study sample =24
Grand total of respondents in the study = 460

3.6 Research Instruments

Six instruments were used to collect data from the fisheries scientists and librarians. These are:

Fisheries Scientists' Questionnaire on Library Use, Publications Output Questionnaire, Librarians' Questionnaire on Availability of Library Resources, Availability of Library Services Questionnaire, Use of Library Resources Questionnaire and Use of Library Services Questionnaire.

3.6.1 Fisheries Scientists' Questionnaire on Library Use

The questionnaire was designed for collecting information on library use by the fisheries scientists. It was divided into four sections: Section A was on demographic information which included name of institution employing the scientist, scientist's gender, age, department, research interest, number of years of working as a fisheries scientist, cadre, salary level, highest qualification and ownership of personal information resources. Section B covers availability and functionality of library resources. It was presented in a likert-type, four-point scale of readily available and functional which was assigned 3 points, available and functional which was assigned 2 points, available but not functional which was assigned 1 point and not available which was assigned 0. Section C sought to assess the adequacy of library services in a four- point likert scale of very adequate which was assigned 4 points, adequate which was assigned 3, inadequate which was assigned 2 and very inadequate which was assigned one point. Section D was on library use and covered questions on frequency, purpose of use of the library, types of resources used and accessibility of the resources to the scientists.

3.6.2 Fisheries Scientists' Questionnaire on Publication Output

It covered questions on number of publications, recency of publications and international visibility of the scientists.

3.6.3 Librarians' Questionnaire on Availability of Library Resources

The questionnaire was designed to elicit information on the resources, services and use of the libraries of the institutions in the study.

It was structured in 2 sections. Section A was on demographic information which included name of the institutions, name of the library, year established, librarian's designation and highest qualification. Section B was on availability of library resources. It was presented as a three- point Likert-type scale of available and functional, available but not functional and not available to be supplied in relation to 10 different library resources. "Available and functional" was assigned 2 points, "available but not functional" was assigned one point, "not available" was assigned 0.

3.6.4 Librarians' Questionnaire on Adequacy of Library Services

This was on library services provided. It was presented as a four-point Likert-type scale, from "very adequate to very inadequate". Very adequate was assigned 4 points, adequate, 3 points, inadequate, 2 points and very inadequate, 1 point. These were to be supplied in relation to 18 different library services.

3.6.5 Librarians' Questionnaire on Use of Library Resources

This Questionnaire was to collect data on use of library resources by the fisheries scientists.

3.6.6 Librarians' Questionnaire on Use of Library Services

This Questionnaire was to collect data on use of library services by the fisheries scientists.

3.7 Validity and Reliability of the Instruments

3.7.1 Face Validity

The questionnaires were criticised by the project supervisor and two other lecturers in the Department of Library, Archival and Information Studies, University of Ibadan who are experts in library research. In addition, experts in the Departments

of Psychology, Sociology, Statistics and Teacher Education were approached for their advice to improve the face validity. The essence of this exercise was to ensure that the questions were clear, simple, appropriate, measurable and applicable to the study. Based on the criticisms and suggestions of the experts, the final drafts were prepared.

3.7.2 Reliability

After the face validity checks, the questionnaires were pre-tested by administering them on fisheries scientists at the Department of Fisheries, Federal University of Technology, Akure and Nassarawa State University, Keffi. The questionnaires for librarians were also administered on the head librarians in the libraries of the two departments. These universities did not participate in the study proper. The completed questionnaires were subjected to crombach alpha for reliability using the Statistical Package for the Social Sciences (SPSS). Fisheries Scientists' Questionnaire on Library Use (r = .71), Publications Output questionnaire (r = 0.77); Librarians' Questionnaire on Availability of Library Resources (r = 0.73); Availability of Library Services (r = 0.68); Use of Library Resources (r = 0.81) and use of library Services (r = 0.76).

3.8 Method of Data collection

Data for the study were collected using the six questionnaires. Twenty four research assistants were trained and used for simultaneous administration of the questionnaires in institutions in the study. The questionnaire for the fisheries scientists were administered before the librarians' because the scientists were more in number and more time was needed to administer the questionnaire to them. Data collection lasted two months.

3.9 Data Analysis Techniques

Data collected was subjected to analysis using both descriptive and inferential statistics. Descriptive statistics were employed to provide answers to research

questions 1 to 4. These are frequency counts, percentages, means and standard deviations while multiple regression analysis was computed for research questions 5&6. The Pearson Product Moment Correlation was used to test hypotheses 1-5.

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction to the chapter

This chapter presents the results of the findings under the following sub-headings: socio-demographic profiles of the respondents, research questions and test hypotheses. A total of 460 copies of the two sets of questionnaires (Fisheries Scientists' – 436, Librarians' – 24) were administered. The usable number returned by the fisheries scientists was 335 making a response rate of 76.83% while the Librarians returned 24 usable copies making a response rate of 100%.

4.2 Demographic Information

The following are different aspects of the demographic profiles of the respondents. Table 4.1 shows the present cadre/designation of the participating librarians.

Table 4.1: Present Designation of the Participating Librarians

Designation	**Frequency**	**Percent**
College Librarian	3	12.5
Institute Librarian	3	12.5
University Librarian	18	75.0
Total	**24**	**100.0**

The study revealed in Table 4.1 that among the librarians in the study sample, there were 3 college librarians, 3 institute librarians and 18 university librarians.

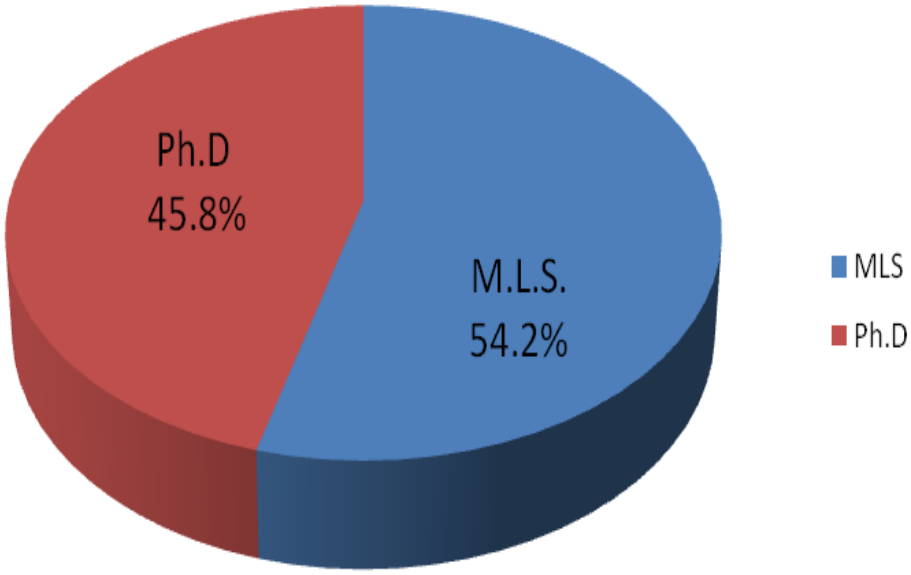

Fig. 4.1: Highest Professional Qualification of the Librarians

Figure 4.1 shows that majority of the librarians in the study sample are holders of the masters degree in Librarianship (54.2%) while the rest are Ph.D holders (45.8%). This shows that the heads of the Fisheries Research Libraries in Nigeria are a highly qualified workforce.

Table 4.2: Information on the fisheries scientists by gender

Gender	Frequency	Percent
Male	240	71.6
Female	95	28.4
Total	**335**	**100.0**

Data in Table 4.2 show that majority of the fisheries scientists are male (71.6%) This means that the profession of Fisheries Scientists in Nigeria is male dominated.

Age of the participating fisheries scientists are presented in the following chart:

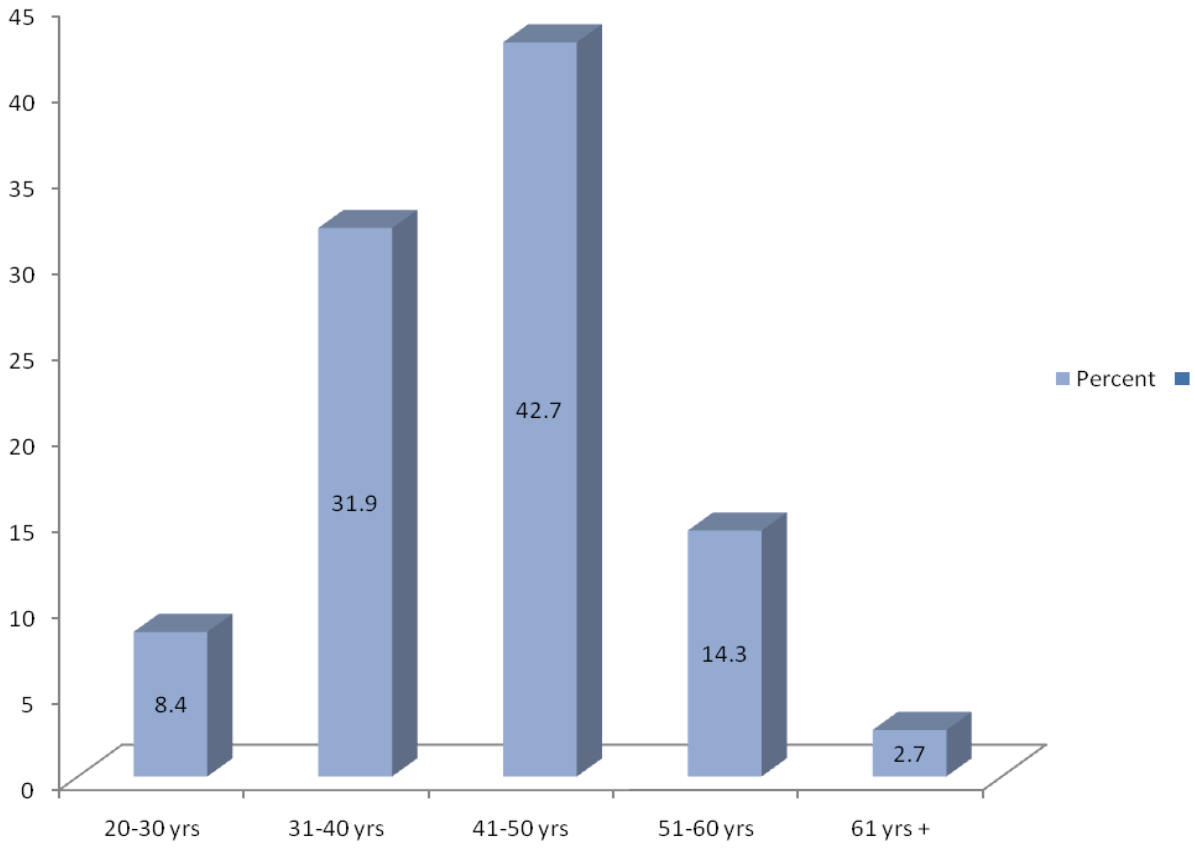

Fig. 4.2: Age of Participating Fisheries Scientists

The demographic profile of the respondents indicates that 42.7% of the participants fall into the age group of 41-50 years while those between ages 31-40 years make up 31.9%. These are the active working ages so, expectedly, they constitute the ages of a majority of the fisheries scientists in Nigeria.

4.3 Research Questions

Seven research questions were raised and answered using simple percentages and multiple regression analysis.

The results are hereby presented in order of the research questions. Research question one investigated the level of availability of library resources in fisheries research support libraries in Nigeria as hereby stated:

4.3.1 Research Question 1:

What is the level of availability of library resources in fisheries research support libraries in Nigeria?

In order to determine the availability of library resources, respondents were asked to indicate their opinion about the availability of various library resources which were listed in the questionnaire. The findings are presented in the tables 4.3 – 4.13:

Table 4.3: Respondents' views on availability of CD-ROM facilities

CD-ROM Facilities	**Frequency**	**Percent**
Not Available	118	35.2
Available but not functional	80	23.9
Available and functional	137	40.9
Total	**335**	**100.0**

From the results in Table 4.3, 35.2% of the respondents stated that CD-ROM facilities were not available, 23.9% stated that they were available but not functional

while 40.9% stated that the facilities were available and functional. This result shows that on the average, Fisheries Research Libraries in Nigeria provide CD-ROM resources for the Fisheries Scientists.

Table 4.4: Respondents' views on availability of electronic databases (ASFA, AGORA, FAO Fisheries Database, DOAJ, INASP etc)

Electronic Databases (ASFA, AGORA, FAO Fisheries Database, DOAJ, INASP etc)	**Frequency**	**Percent**
Not Available	93	27.8
Available but not functional	46	13.7
Available and functional	196	58.5
Total	**335**	**100.0**

On the availability of electronic database, 27.8% explained that they were not available, 13.7% mentioned that they were available but not functional while 58.5% opined that they were available and functional.

Table 4.5: Respondents' views on availability of Internet facilities

Internet Facilities	**Frequency**	**Percent**
Not Available	28	8.4
Available but not functional	40	11.9
Available and functional	267	79.7
Total	**335**	**100.0**

Table 4.6: Respondents' views on availability of seating facilities

Seating Facilities	**Frequency**	**Percent**
Not Available	21	6.3
Available but not adequate	9	2.7
Available and adequate	305	91.1
Total	**335**	**100.0**

On the issues of availability of the Internet, 60.3% of the respondents stated that they were available and functional while 66% of them stated that seating facilities were available and adequate in the libraries.

Table 4.7: Respondents' views on availability of library staff

Library Staff	**Frequency**	**Percent**
Not Available	19	5.7
Available but not adequate	13	3.9
Available and adequate	303	90.4
Total	**335**	**100.0**

The availability of library staff as rated by the respondents indicated that 5.7% agreed that they were not available, 3.9% indicated available but not adequate, 90.4% (majority) stated that they were available and adequate.

Table 4.8: Respondents' views on availability of audio-visual resources (Cameras, audio/video cassettes/recorders, projectors, computers/printers, CD-ROM etc.)

Audio-Visual Resources (Cameras, audio/video cassettes/recorders, projectors, computers/printers, CD-ROM etc.)	**Frequency**	**Percent**
Not Available	140	41.8
Available but not functional	76	22.7
Available and functional	119	35.6
Total	**335**	**100.0**

Data show in Table 4.8 that a total of 41.8% stated that audio-visual resources were not available in their libraries; 22.7% noted that the audio-visual resources were available but not functional. However, 35.6% indicated that audio-visual resources were available and functional in their libraries.

Table 4.9: Respondents' views on availability of shelving facilities

Shelves	**Frequency**	**Percent**
Not Available	17	5.1
Available but not functional	18	5.4
Available and functional	300	89.6
Total	**335**	**100.0**

On availability of shelving facilities, 89.6% of the respondents admitted that they were available and functional.

Table 4.10: Respondents' views on availability of book resources

Book Resources	Frequency	Percent
Not Available	29	8.7
Available but not adequate	26	7.8
Available and adequate	280	83.6
Total	**335**	**100.0**

Table 4.11: Respondents' views on availability of bindery facilities

Bindery Facilities	Frequency	Percent
Not Available	107	31.9
Available but not functional	64	19.1
Available and functional	164	49.0
Total	**335**	**100.0**

Table 4.12: Respondents' views on availability of computers/printers

Computers/Printers	Frequency	Percent
Not Available	65	19.4
Available but not functional	51	15.2
Available and functional	219	65.3
Total	**335**	**100.0**

From Table 4.10, a total of 83.6% noted that book resources were available and adequate in their libraries. In Table 4.11, when compared to those who disagreed, 40.9% stated that bindery facilities were available and functional in their libraries. Results in Table 4.12 showed that 50.7% admitted that the computers and printing facilities were available and functional.

In order to determine the accessibility of the available library resources to the fisheries scientists, they were asked to indicate whether or not they experience any difficulty in using any of the library resources.

Table 4.13: Respondents' views on ease of library use

Responses	**Frequency**	**Percent**
Yes	77	23.0
No	258	77.0
Total	**335**	**100.0**

From Table 4.13, 77.0% do not experience any difficulty in using any of the library's resources while 23.0% indicated that they do experience some difficulties in using the library's resources. The difficulties indicated include inexperience in the use of some of the resources such as the audio-visual resources and lack of adequate ICT use skills.

4.3.2 Research Question 2: What are the services provided by the fisheries research support libraries to the fisheries scientists in Nigeria?

In order to identify the library services provided by the fisheries research support libraries to the fisheries scientists, the heads of the libraries were asked to indicate the availability and adequacy of various services in their libraries. The services were listed in the questionnaire. The findings are presented as follows:

Table 4.14: Respondents' views on duration of book loan

The opinions of the librarians concerning the adequacy of book loans are presented in the following table:

Book Loans	**Frequency**	**Percent**
Available but not adequate	8	33.3
Adequate	16	66.7
Total	**24**	**100.0**

From the results in Table 4.14, 33.3% of the heads of the libraries stated that book loan service was available but not adequate while 66.6% opined that their book loan services were adequate. None of the respondents indicated that the service was not available. Interaction with some of the librarians revealed that though this service is available in all the libraries, it is inadequate in some libraries because of insufficient availability of current journals and books. This result corroborates the opinions of the fisheries scientists whereby 89.9% of them confirmed adequate and very adequate duration of book loans by the libraries.

Table 4.15: Respondents' views on reference services

Reference Services	**Frequency**	**Percent**
Available but not adequate	5	20.8
Adequate	19	79.2
Total	**24**	**100.0**

On reference services, 79.2% stated that this was adequate while 20.8% indicated that it available but not adequate. None of the librarians indicated that reference services were not available in their libraries.

Table 4.16: Respondents' views on adequacy of photocopying services

Photocopying Services	Frequency	Percent
Available but not adequate	10	41.7
Adequate	14	58.4
Total	**24**	**100.0**

On the issue of availability and adequacy of photocopying services, 58.4% reported adequacy of the services while 41.7% reported that they were available but not adequate in their libraries.

Table 4.17: Respondents' views on adequacy of Internet services

Responses of the heads of the libraries on adequacy of Internet services in the libraries are presented as are here shown:

Internet Services	**Frequency**	**Percent**
Available but not adequate	6	25
Adequate	18	75
Total	**24**	**100.0**

From Table 4.17, a total of 75% of the respondents noted that the Internet services were adequate. However, 25% reported inadequate Internet services in their libraries. This result confirms the responses of the fisheries scientists where 79.7% of them stated that Internet facilities were available and functional in their institutions' libraries.

Table 4.18: Respondents' views on Selective Dissemination of Information (SDI)

Selective Dissemination of Information(SDI)	Frequency	Percent
Available but not adequate	13	54.2
Adequate	11	45.8
Total	**24**	**100.0**

Table 4.18 shows that 54% of the respondents indicated that SDI in the libraries was available but inadequate while 45.8% indicated adequacy of the service. This result is slightly in variance with the opinions of the fisheries scientists where 62.4% of them opined that SDI services in their institution' libraries were inadequate or very inadequate.

This issue, however, remains a matter of opinion as previous studies did not recommend standards for measurement.

Table 4.19: Respondents' views on user education

User Education	Frequency	Percent
Available but not adequate	1	4.2
Adequate	23	95.8
Total	**24**	**100.0**

Results in Table 4.19 show that majority of the respondents (95.8%) indicated that user education is adequately provided in the libraries. From informal interaction with some of the heads of the libraries and some of the fisheries scientists, it was perceived that the type of user education mostly provided especially in the colleges of fisheries and universities is use of library course.

Table 4.20: Respondents' views on library orientation

Library Orientation	Frequency	Percent
Available but not adequate	1	4.2
Adequate	23	95.8
Total	**24**	**100.0**

Table 4.21: Respondents' views on opening hours/days

Opening Hours/ Days	Frequency	Percent
Available but not adequate	9	37.5
Adequate	15	62.5
Total	**24**	**100.0**

Table 4.22: Respondents' views on weekend library services

Weekend Library Services	Frequency	Percent
Available but not adequate	4	16.7
Adequate	20	83.4
Total	**24**	**100.0**

Data indicate in Tables 4.20, 4.21 and 4.22 that majority of the respondents (95.8%, 100% and 83.4%) respectively indicated that that the services were adequate.

Table 4.23: Respondents' views on CD-ROM search

CD-ROM Search	Frequency	Percent
Available but not adequate	9	37.5
Adequate	15	62.5
Total	**24**	**100.0**

In Table 4.23, 62.5% of the respondents indicated that CD-ROM search services were adequate in the libraries.

Table 4.24: Respondents' views on compilation of bibliography

Compilation of Bibliography	Frequency	Percent
Available but not adequate	17	70.9
Adequate	7	29.1
Total	**24**	**100.0**

Table 4.25: Respondents' views on publication of tables of content of new journals

Publication of Tables of Content of New Journals	Frequency	Percent
Available but not adequate	21	87.5
Adequate	3	12.5
Total	**24**	**100.0**

Table 4.26: Respondents' views on publication of accessions list of new materials

Publication of Accessions List of New Materials	**Frequency**	**Percent**
Available but not adequate	18	75
Adequate	6	25
Total	**24**	**100.0**

Results in Tables 4.24, 4.25 and 4.26 show that majority of the respondents (70.9%, 87.5% and 75%) respectively indicated that compilation of bibliography, publication of tables of content of new journals and publication of accessions list of new materials were inadequate in the libraries.

Table 4.27: Respondents' views on display of new arrivals

Display of New Arrivals	**Frequency**	**Percent**
Available but not adequate	9	37.5
Adequate	15	62.5
Total	**24**	**100.0**

From Table 4.27, 62.5% of the respondents indicated adequate display of new arrivals while 37.5% indicated that the service was available but not adequate in the libraries. None of them indicated that the service was not available.

Table 4.28: Respondents' views on indexing and abstracting

Indexing and Abstracting	Frequency	Percent
Available but not adequate	7	29.2
Adequate	17	70.8
Total	**24**	**100.0**

Results as are highlighted in Table 4.28 show that majority of the respondents (70.8%) indicated that indexing and abstracting services were adequate in the libraries.

Table 4.29: Respondents' views on translation of foreign language periodicals

Translation of Foreign Language Periodicals	Frequency	Percent
Available but not adequate	12	50
Adequate	12	50
Total	**24**	**100.0**

Data from Table 4.29 show that 50% of the respondents reported adequate services for translation of foreign language periodicals while 50% reported inadequate services.

4.3.3 Research Question 3: How adequate are the library services provided by the fisheries research support libraries in Nigeria?

In order to assess the degree of adequacy of the library services provided by the fisheries research support libraries to the fisheries scientists, the scientists were required to indicate their responses from a Likert type 4- point scale from very adequate, adequate, inadequate to very inadequate for each item in a list of library services provided. The findings are presented in the following tables.

Table 4.30: Respondents' views on adequacy of duration of book loan

Duration of Book Loan	Frequency	Percent
Very Adequate	15	4.5
Adequate	233	69.6
Inadequate	19	5.7
Very Inadequate	68	20.3
Total	**335**	**100.0**

From the results in Table 4.30, 69.6% stated that duration of book loan is adequate while 20.3% also agreed that the duration of book loan is very adequate. Only about 26% stated that the duration was either inadequate or very inadequate.

Table 4.31: Respondents' views on adequacy of reference services

Reference Services	Frequency	Percent
Very Adequate	32	9.6
Adequate	229	68.4
Inadequate	41	12.2
Very Inadequate	33	9.9
Total	**335**	**100.0**

On the reference services, 68.4% of the respondents stated that it was adequate while 9.9% opined that it was very inadequate. Table 4.31 revealed that majority of the fisheries scientists indicated that reference services were adequate in the fisheries research support libraries.

Table 4.32: Respondents' views on adequacy of photocopy services

Photocopy Service	**Frequency**	**Percent**
Very Adequate	86	25.7
Adequate	98	29.3
Inadequate	134	40.0
Very Inadequate	17	5.1
Total	**335**	**100.0**

On the issue of adequacy of photocopy services, 40.0% indicated that the services were inadequate while more than 50% indicated that they were either adequate or very adequate in the libraries.

Table 4.33: Respondents' views on Selective Dissemination of Information

Selective Dissemination of Information	**Frequency**	**Percent**
Very Adequate	67	20.0
Adequate	59	17.6
Inadequate	201	60.0
Very Inadequate	8	2.4
Total	**335**	**100.0**

From Table 4.33, a total of 62.4% noted that the selective dissemination of information was either inadequate or very inadequate. However, about 37% indicated that the SDI services were adequate in the libraries.

Table 4.34: Respondents' views on the librarians' answering of users' queries

Answering Users' Queries	Frequency	Percent
Very Adequate	42	12.5
Adequate	193	57.6
Inadequate	70	20.9
Very Inadequate	30	9.0
Total	**335**	**100.0**

On the issue of the librarians' responsiveness to the users' queries, 57.6% of the respondents opined that the library services in this regard was adequate and 12.5% indicated that there were very adequate answers to their queries. Table 4.34 showed, therefore, that majority of the respondents were satisfied with the librarians' responsiveness to their queries.

Table 4.35: Respondents' views on number of hours library is open to users daily

No of Hours Library is Open to Users Daily	Frequency	Percent
Very Adequate	21	6.3
Adequate	223	66.6
Inadequate	30	9.0
Very Inadequate	61	18.2
Total	**335**	**100.0**

Majority (66.6%) of the respondents indicated that the number of hours library is open to users daily is adequate while 6.3% felt it is very adequate. Only about 27% of them indicated that the number of hours the library is open to users daily is either inadequate or very inadequate.

Table 4.36: Respondents' views on adequacy of inter-library loan services

Inter-Library Loan Services	Frequency	Percent
Very Adequate	90	26.9
Adequate	59	17.6
Inadequate	172	51.3
Very Inadequate	14	4.2
Total	**335**	**100.0**

Table 4.37: Respondents' views on library orientation

Library Orientation	Frequency	Percent
Very Adequate	44	13.1
Adequate	195	58.2
Inadequate	68	20.3
Very Inadequate	28	8.4
Total	335	100.0

Table 4.38: Respondents' views on weekend library services

Weekend Library Services	Frequency	Percent
Very Adequate	114	34.0
Adequate	156	46.6
Inadequate	51	15.2
Very Inadequate	14	4.2
Total	**335**	**100.0**

Table 4.39: Respondents' views on provision of reading space

Provision Of Reading Space	Frequency	Percent
Very Adequate	19	5.7
Adequate	201	60.0
Inadequate	53	15.8
Very Inadequate	62	18.5
Total	**335**	**100.0**

From Table 4.36, a total of 51.3% noted that the inter-library loan was not adequate while 4.2% indicated that it was very inadequate.

However, over 60% of the respondents indicated that library orientation was adequate or very adequate as was shown in table 4.37.

In Table 4.38, over 80% of the fisheries scientists admitted that the weekend library services were either adequate or very adequate to them. Results in Table 4.39 showed that over 60% indicated that reading space was also adequate.

Table 4.40: Respondents' views on provision of current journals

Provision of Current Journals	Frequency	Percent
Very Adequate	42	12.5
Adequate	64	19.1
Inadequate	204	61.5
Very Inadequate	23	6.9
Total	**335**	**100.0**

The provision of current journals was rated as being adequate by 19.1% and very adequate by 12.5%. However, 61.5 % (majority) indicated that provision of

current journals was inadequate, in addition to 6.9% that indicated very inadequate provision of current journals.

4.3.4 Research Question 4: What is the frequency of use of library services and resources by the fisheries scientists in Nigeria?

In order to determine the frequency of use of the library resources and services by the fisheries scientists, they were required to indicate their frequency of use of their institutions' libraries. This yielded the result in Figure 4.3.

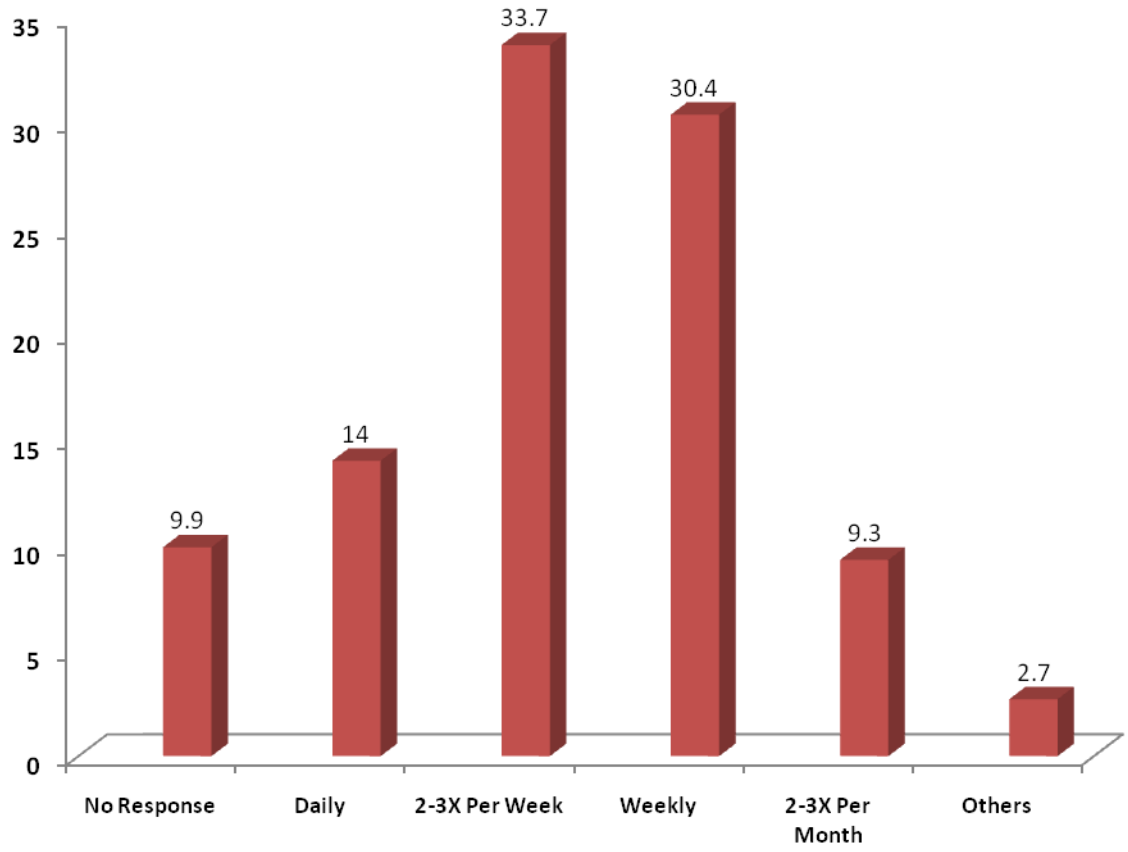

Fig. 4.3: Frequency of library use by the respondents

From figure 4.3, 14% of the respondents use their institutions' libraries daily, 33.7% use them about 2 to 3 times in a week, 30.4% use them weekly while 9.3% use

them about 2 to 3 times in a month. However, minority (2.7%) of the respondents hinted that they rarely (only when they have specific information need) or never use the library. This could mean a vote of no confidence in their institutions' libraries because they certainly source information from elsewhere. This result corroborates the assertion of Meadow and Yuan (1997) and Popoola (2008) that if the institutional information services fail to meet the needs of the scientists, they would use other available systems. A few participants (9.9%) did not respond to this question. This could suggest apathy as a result of unsatisfactory institutional information system.

In order to probe further into the fisheries scientists' use of their institutions' libraries, they were asked to identify the purpose for which they mostly visit the library. The findings are presented in Table 4.41.

Table 4.41: Respondents' views on their purpose of visiting the library

For what purpose do you visit the library most ?	**Frequency**	**Percent**
Leisure Reading	30	9.0
General Reading	104	31.0
Research-Related Information Need	181	54.0
Internet Browsing & E-mail services	20	6.0
Total	**335**	**100.0**

Table 4.41 revealed that most (54%) of the respondents visit the library for research-related information needs while a significant number (31%) also visit for general reading. However, a few of the scientists (6%) visit for Internet browsing and E-mail services only while a few others (9%) visit for leisure reading. Further

investigation was made to determine the type of information materials that the scientists found most useful. The findings are presented in Figure 4.4.

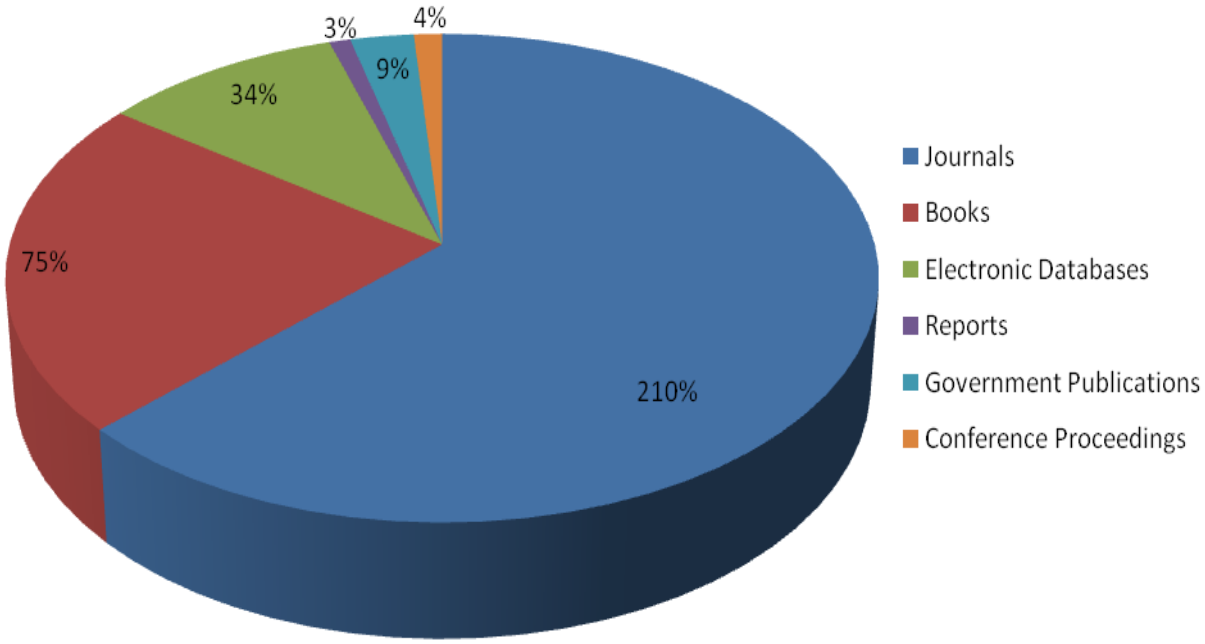

Fig. 4.4: Respondents' views on the library materials found most useful

From figure 4.4, it can be deduced that majority of the respondents (62.7%) find journals most useful. However, 22.4% also find books most useful. This result has implication for the collection development of the fisheries libraries. Their collection must reflect the information needs of the fisheries scientists.

4.3.5 Research Question 5

What is the joint influence of the independent variables (availability of library resources, availability of library services, adequacy of services provided by the libraries and use of library resources and services) on publications output of the fisheries scientists?

Table 4.42: Joint influence of the independent variables on publications output of the fisheries scientists

R	R Square	Adjusted R Square	Std. Error of the Estimate	CHANGE STATISTICS	
				R Square Change	F Change
.285[a]	.081	.067	16.52667	.081	5.813
ANOVA[b]					
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Regression	7938.95	4	1,984.73	5.813	<.05
Residual	89860.01	329	273.131		
Total	**97798.97**	**333**			

Results of the study as are highlighted in Table 4.42 show that there was joint influence of the independent variables (availability of library resources, availability of library services, adequacy of services provided by the libraries, use of library resources and use of library services) on publication output of the participants (fisheries scientists) : r = 0.28, P<.05. The table further revealed that 6.7% (Adj. R^2 = 0.067) of the variance in the publication output of the fisheries scientists were accountable for by the linear combination of the independent variables.

The ANOVA results from the regression analysis show that there was significant influence of the independent variables on the dependent variable;

F (5, 329) = 5.83, P<.05.

4.3.6 Research Question 6

What is the relative influence of each of the independent variables (availability of library resources, availability of library services, adequacy of library services, use of library resources and use of library services) on publication output of the fisheries scientists?

Table 4.43: Relative influence of the independent variables on the dependent variable

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	44.719	4.199		10.65	.000
Availability of Library Resources	-.148	.058	-.140	-2.55	<0.05
Availability of Library Services	.164	.061	.156	2.68	<0.05
Adequacy of Library Services	-.072	.056	-.075	-1.30	NS
Use of Library Resources	-.177	.052	-.147	-2.13	<0.05
Use of Library Services	-.166	.043	-.141	2.18	<0.05

Table 4.43 reveals that four out of the five independent variables showed relative influence on the publications output among the fisheries scientists. The variables include the following: availability of library resources (β = -.140, t = 2.55, P <0.05); availability of library services (β = 0.156, t = 2.68, P <0.05) use of library resources (β = -.147 t = 2.13, P<0.05) and use of library services (β = -.141, t = 2.18, P<0.05).

However, adequacy of services provided by library did not have significant relative influence on publication output of the fisheries scientists (β = 0.075, t = 1.130, P>0.05).

It is important to note that availability of library services had the highest influence on publications output of the fisheries scientists (β = 0.156, t = 2.68, P<0.05) while adequacy of services provided by libraries had the least (β = 0.075, t = 1.130, NS).

4.4 Hypotheses Testing

Five hypotheses were tested in the study at 0.05 level of significance. The results of the tests are presented in tables 4.44 to 4.48.

4.4.1 Hypothesis 1: There is no significant relationship between availability of library resources and publications output of fisheries scientists in Nigeria.

Table 4.44: Relationship between availability of library resources and publication output of fisheries scientists in Nigeria

Variable	N	$\bar{x}$	S D	Df	r	P	Remark
Availability of library resources	335	39.90	15.97	668	0.096	>0.05	Not Significant
Publications output	335	34.40	17.11				

Note: N = 670, P < .05 (2-tailed test).

Table 4.44 revealed that the correlation coefficient "r" between availability of library resources and publications output is 0.096 and P>0.05. Since P>0.05, it implies that there is no significant relationship between availability of library resources and publication output of fisheries scientists in Nigeria. Based on this, the null hypothesis is accepted.

This result is in agreement with some earlier studies such as Curtis, Weller and Hurd (1997), and Zhang (1998). The studies found that academic staff preferred to access electronic databases from their offices to the library. Zhang (1998) surveyed the use of electronic resources by academic staff at Rollins College in the USA and observed that 69% of academics sampled used the online catalogue, 53% used UMI's Pro Quest direct online databases, 35% used the OCLC first search package and 35% used the Pro Quest CD-Rom databases made available through the campus network.

Bonzi (1992) indicated that access to databases and computer support facilitated academic staff's research productivity.

However, contrary to these views, Baldwin and Rice (1997) found that heavier library use was related to work productivity among security analysts. Hughes (1999) also found a correlation between access to research resources, supportive telecommunication environment and information professionals with high academic publishing productivity.

Generally, most scholars involved in academic research performances have not considered resource support and availability as possible variables.

4.4.2 Hypothesis 2: There is no significant relationship between availability of library services and publication output of fisheries scientists in Nigeria.

Table 4.45: Relationship between availability of library services and publication output of fisheries scientists in Nigeria.

Variable	N	$\bar{x}$	S D	Df	r	p	Remark
Availability o library services	335	33.32	16.29	668	0.174	<0.05	*Significant
Publications output	335	34.40	17.11				

Note: N = 670, * P < .05 (2-tailed test).

Results of the study in Table 4.45 revealed that the correlation coefficient "r" between availability of library services and publications output is 0.174 and P<0.05. Since P<0.05, it implies that there is significant relationship between availability of library services and publication output of fisheries scientists in Nigeria. Based on this, the null hypothesis is not accepted. The corollary is true.

4.4.3 Hypothesis 3: There is no significant relationship between adequacy of services provided by the fisheries libraries and publication output of fisheries scientists in Nigeria.

Table 4.46: Relationship between adequacy of services provided by fisheries libraries and publication output of fisheries scientists in Nigeria.

Variable	N	X	S D	Df	r	p	Remark
Adequacy o services by lib	335	30.41	17.84	668N =	0.030	>0.05	Not Significant
Publications output	335	34.40	17.11				

Note: N = 670, P>.05 (2-tailed test)

The study revealed in Table 4.46 that the correlation coefficient "r" between adequacy of services provided by fisheries libraries and publication output is 0.030 and P>0.05. Since P>0.05, it implies that there is no significant relationship between adequacy of services provided by fisheries libraries and publication output of fisheries scientists in Nigeria. Based on this the null hypothesis is accepted.

4.4.4 Hypothesis 4: There is no significant relationship between use of library resources and publication output of fisheries scientists in Nigeria.

Table 4.47: Relationship between use of library resources and publication output of fisheries scientists in Nigeria.

Variable	N	X	S D	Df	r	p	Remark
Use of library resources	335	30.54	16.74	333	0.165	<0.05	*Significant
Publications output	335	34.40	17.11				

Note: N = 335, * P < .05 (2-tailed test).

Table 4.47 reveals that the correlation coefficient "r" between use of library resources and publications output is 0.165 and P<0.05. Since P<0.05, it implies that there is significant relationship between use of library resources and publication output of fisheries scientists in Nigeria. Based on this the null hypothesis is rejected.

4.4.5 Hypothesis 5: There is no significant relationship between use of library services and publication output of fisheries scientists in Nigeria.

Table 4.48: Relationship between use of library services and publication output of fisheries scientists in Nigeria.

Variable	N	X	S D	Df	r	p	Remark
Use of library services	335	29.71	16.23	333	0.189	<0.05	*Significant
Publications output	335	34.40	17.11				

Note: N = 335, * P < .05 (2-tailed test).

Table 4.48 reveals that the correlation coefficient "r" between use of library services and publication output is 0.189 and P<0.05. Since P<0.05, it implies that there is significant relationship between use of library services and publication output of fisheries scientists in Nigeria. Based on this the null hypothesis is rejected.

4.5 Discussion of the Findings

The findings of the research are discussed in this section under demographic information, findings based on the research questions and findings based on the hypotheses.

4.5.1 Demographic information

Gender distribution of the fisheries scientists in the study revealed that males are in the majority among the fisheries scientists in Nigeria (71.6%) while their female counterparts are only (28.4%). This finding is in agreement with Ibeun (2001) which recorded a greater number of males than females in the "Directory of Human Resources in Nigerian Fisheries and Aquatic Sciences". Age distribution of the fisheries scientists shows that the majority of them belong to the age group of 41- 50 years (42.7%). The other age groups are 20-30 years (8.4%), 31-40years (31.9%), 51-60 years (14.3%) and 61 years and above (2.7%). A high number of the scientists fall within the active working ages of 31-50 years. This is as expected.

Among the librarians in the study sample are three college librarians, three institute librarians and 18 university librarians. Thirteen librarians out of the total of 24 are holders of the Master of Library Studies (M.L.S.) while 11 hold the Ph.D degrees. This shows that the head librarians in the fisheries research libraries in Nigeria are a highly qualified workforce. For this reason therefore, high standards of library and information resources, services and use are expected of the libraries.

4.5.2 Findings based on the research questions

Research question 1: **What is the level of availability of library resources in fisheries research support libraries in Nigeria?**

Respondents' views on availability of library resources revealed that electronic databases, internet facilities, seating facilities, library staff, shelves, book resources, computers and printers have high levels of availability in the libraries while CD-ROM facilities, audio-visual resources and bindery facilities have low levels of availability. Based on results obtained from the study, availability of information resources is

critical and very vital for the effectiveness of fisheries research support libraries in providing adequate information support to the fisheries scientists for their information needs for research and publications. The analysis presented suggest that the modern and ICT-based resources have high level of availability in the libraries while those that are related to traditional and non ICT-based library operations have low level of availability.

The possible explanation to this finding is that the current trend in modern librarianship is digital library services so library resources that are not related to provision of computer and internet based library operations are fast getting out of stock in many libraries. This result is in agreement with earlier studies such as Ibeun (2004), FAO (2007) and Zhou and Subasinghe (2010) who have hinted that although significant progress has been made on providing information resources and meeting information needs for promoting sustainable Fisheries and Aquaculture worldwide, there remains much work to be done to further improve the knowledge base. Availability of library and information resources is prerequisite for the provision of library and information services.

Further probe in an attempt to answer the research question 1 revealed that majority of the fisheries scientists (77%) do not experience any difficulty in using any of the resources of their institution's libraries. However, a few of them (23%) admitted experiencing some difficulties in using some of the resources.

The difficulties identified include inexperience in the usage of some of the resources and lack of adequate ICT skills. This finding justifies the requirement of some of the fisheries institutions of evidence of possession of adequate ICT skills as one of the conditions for recruitment of fisheries scientists.

Research question 2: **What are the services provided by the fisheries research support libraries to the fisheries scientists in Nigeria?**

The services provided by the fisheries research support libraries to the fisheries scientists as were revealed by the responses of the head librarians include: book loans, reference services, photocopy services, internet services, user education, library

orientation, adequate opening hours/days, weekend library services, CD-ROM search, display of new arrivals, indexing and abstracting.

However, it was revealed that the following services were either not provided or not adequate in the libraries: Selective Dissemination of Information (SDI), compilation of bibliography, publication of tables of content of new journals, publication of accessions list of new materials and translation of foreign language periodicals. It can be deduced from this finding that the services of the fisheries research libraries are closely related to the resources available in them.

The services that are related to modern library operations and information services are provided by the libraries to the scientists while those that are associated with traditional and manual library operations are no longer provided by the libraries. Interaction with some of the head librarians revealed that provision of digital library services and computer based library operations have rendered some of those services obsolete. This is why they are very rarely provided by libraries presently. However, some of the librarians hinted that insufficient library staff is the reason for their inability to provide such services.

Whatever the cause, the inference that can be drawn from this is that libraries that do not join the current trend of automation of library operations will definitely be left out and will lag behind in the provision of library and information services.

It would also be almost impossible for such libraries to engage in any form of cooperation and resource sharing with other libraries of similar interests. It is logical therefore to say that fisheries research libraries in Nigeria must key into this trend of automation so that there would be optimum benefit derivable from the available library resources and services for an enhanced publications output of fisheries scientists in Nigeria.

Research question 3: **How adequate are the library services provided by the fisheries research support libraries in Nigeria?**

The study found that the following library services are adequately provided by the fisheries research support libraries in Nigeria: reference services, book loan, photocopy services, answering users' queries, opening hours/days, library orientation, weekend library services and provision of reading space. On the other hand, it was also established that Selective Dissemination of Information (SDI), inter-library loans and provision of current journals are inadequate in the libraries. This contradicts the finding of Hanif et al (1997) which showed that although a good library, well equipped with books and periodicals in all subjects is essential for advanced study and research, there is inadequacy of recent publications and current journals and the information needs of the faculty members are not adequately met by the existing library services. However, it agrees with the view of Zainab (2001) that library and information resources and services provided are fairly adequate for the research needs of the researchers.

Research question 4: What is the level of use of library resources and services by the fisheries scientists in Nigeria?

The study revealed that 14% of the fisheries scientists use their institution's libraries daily, 33.7% use them 2-3 times in a week, 30.4% use them weekly, 9.3% use them 2-3 times in a month while 2.7% rarely or never use them. However, a few respondents (9.9%) did not respond to this question. A majority of the fisheries scientists, therefore, use their institution's libraries between 2-3 times in a week and weekly. This result shows that majority of the fisheries scientists use their institutions' libraries regularly. This finding contradicts the position of some earlier studies such as Okiy (2000), Popoola (2002), Kemani (2002) and Ojedokun & Owolabi (2003); who opined that the resources and services of academic and research libraries in Nigeria were under utilised. On the contrary, the fisheries scientists make regular use of their institution's libraries. It however corroborates the finding of Ibeun (1995, 2004) that

the library is the first port of call of fisheries scientists for their information needs. General observation, however, shows that the fisheries scientists in Nigeria averagely make use of their institution's library's resources and services for their information needs for research and publications. More questions were asked in order to further investigate the use of the resources and services.

The following facts were established: 54% of the fisheries scientists visit the library for research-related information needs, 31% for general reading, 6% for internet browsing and E-mail services, 9% for leisure reading. It was also established that 62.7% found journals most useful, 22.4% said that books were most useful to them, 10.1% found electronic databases most useful, 0.9% affirmed that they found reports most useful, 2.7% - government publications and 1.2% - conference proceedings. Thus a majority of the fisheries scientists (85.1%) found journals and books most useful in the libraries. The foregoing, placed against the background of the finding of Hanif et al (1997), that important as provision of current books and journals is in the library, the service is not adequately provided by existing library services; it confirms the opinion of Aguolu and Aguolu (2002) that the intellectual starvation of researchers and scholars in form of scarcity of books and journals could blight the future of the African continent in a way that a more obviously remediable shortage of food will not.

This means that scientists in developing countries are usually faced with problems of inadequate current library materials, inefficient provision of information services, poor searching skill and poor knowledge of existing information products and services in the library. However, findings based on the study also suggest that the concept of adequacy can be subjective and controversial. What appears adequate in the judgement of one scientist may be adjudged by another as inadequate.

Research question 5: What is the joint influence of the independent variables (availability of library resources, availability of library services, adequacy of services provided by the libraries and use of library resources and services) on publications output of the fisheries scientists?

Results show that there was significant joint influence of the independent variables on the publications output of the fisheries scientists (R=0.28, P<.05). It was further revealed that 6.7% (Adj.R^2 =0.067) of the variance in the publications output of the fisheries scientists were accountable for by the linear combination of the independent variables. The ANOVA results from the regression analysis showed that there was significant influence of the independent variables on the dependent variable; F (5,329) =5.83,P<.05. This means that library resources, services and use actually determine the publications output of the benefiting fisheries scientists in Nigeria. If adequate library resources and services are provided, they are most likely to stimulate increased use of the libraries which would ultimately translate to enhanced publication output.

Research Question 6: What is the relative influence of each of the independent variables (availability of library resources, availability of library services, adequacy of services provided by the libraries, use of library resources and use of library services) on publication output of the (fisheries scientists)?

Table 4.47 reveals that four out of the five independent variables showed relative influence on the publication output among the fisheries scientists. The variables include the following: availability of library resources (β = 0.138, t = 2.55, P <0.05); adequacy of library services (β = 0.156, t = -2.42, P<0.05) use of library resources (β = 0.156, t = 2.68, P<0.05) availability of library services (β = 0.156, t = 2.68, P <0.05) and use of library services (β = 0.075, t = 1.130, P>0.05).

However, adequacy of services provided by library did not have significant relative contribution to publication output among the fisheries scientists (β = 0.075, t = 1.130, P>0.05).

This result is totally in agreement with the finding of Hanif, Zabed-Ahmed and Nasir (1997) which stressed that the library collection must be adequate in terms of quantity, quality and currency. This suggests the availability of library resources and services. It must also be accessible to the community it serves; suggesting the use of the resources and services. It is also in accord with Agba, Kigongo-Bukenya and Nyumba (2004) which asserts that the shift from print to electronic information means that both academic staff and students in a university system and elsewhere must use these resources and services for better quality, efficient and effective research more than ever.

4.5.3 Findings based on the Hypotheses

Five hypotheses were tested in the study at 0.05 level of significance. Based on the results of the hypotheses testing, the following facts were established:

Hypothesis 1: There is no significant relationship between availability of library resources and publication output of fisheries scientists in Nigeria.

Table 4.49 revealed that the correlation coefficient "r" between availability of library resources and publication output is 0.096 and P>0.05. Since P>0.05, it implies that there is no significant relationship between availability of library resources and publication output of fisheries scientists in Nigeria. Based on this, the null hypothesis is accepted. This implies that availability of library resources does not necessarily mean that they will be used and so does not necessarily translate to publications output of the user community. This implies that beyond availability of library resources, more importantly, is the use made of the resources by the scientists. If the resources are available but they are not adequately used by the scientists, their publication output will remain low.

Hypothesis 2: There is no significant relationship between availability of library services and publication output of fisheries scientists in Nigeria.

Table 4.50 revealed that the correlation coefficient "r" between availability of library services and publication output is 0.174 and P<0.05. Since P<0.05, it implies that

there is a significant relationship between availability of library services and publication output of fisheries scientists in Nigeria. Based on this, the null hypothesis is not accepted. This implies that provision of library services is a prerequisite for the use of library resources and services.

Hypothesis 3: There is no significant relationship between adequacy of services provided by fisheries libraries and publication output of fisheries scientists in Nigeria.

Table 4.51 revealed that the correlation coefficient "r" between adequacy of services provided by fisheries libraries and publications output is 0.030 and P>0.05. Since P>0.05, it implies that there is no significant relationship between adequacy of services provided by fisheries libraries and publication output of fisheries scientists in Nigeria. Based on this the null hypothesis is accepted. The reason for this result is not farfetched. The concept of adequacy is subjective and controversial. What one considers adequate may be adjudged as inadequate by another. Furthermore, the adequacy of the library resources and services does not guarantee their use and so it does not necessarily translate to increased publication output.

Hypothesis 4: There is no significant relationship between use of library resources and publication output of fisheries scientists in Nigeria.

Table 4.52 reveals that the correlation coefficient "r" between use of library resources and publication output is 0.165 and P<0.05. Since P<0.05, it implies that there is significant relationship between use of library resources and publication output of fisheries scientists in Nigeria. Based on this the null hypothesis is rejected.

This implies that library resources must not only be available but must also be made use of by the user community (fisheries scientists) before they can translate to publication output.

Hypothesis 5: There is no significant relationship between use of library services and publication output of fisheries scientists in Nigeria.

Table 4.53 reveals that the correlation coefficient "r" between use of library services and publication output is 0.189 and P<0.05. Since P<0.05, it implies that there is significant relationship between use of library services and publication output of fisheries scientists in Nigeria. Based on this the null hypothesis is rejected. This implies that similar to use of library resources, library services also must not only be provided by the fisheries libraries but must also be made use of by the fisheries scientists before they can result in their enhanced publication output.

This result and that of hypothesis 4 are in agreement with earlier studies such as Meadow and Yuan (1997) and Popoola (2008) which reported significant relationship between use of library and publication output among researchers. This has serious implications for user education in the fisheries libraries. Regardless of the adequacy of available library resources and services, if the fisheries scientists do not make adequate use of them, their publication output will not increase.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, implications of the findings, contribution to knowledge, conclusion, recommendations, limitations of the study and suggestions for further research.

5.2 Summary of Findings

The major findings of the study are as follows:

i. Library resources that are related to provision of computer based library services are generally available in fisheries research support libraries in Nigeria while those that are related to the traditional library services are fast getting out of stock.

ii. The fisheries research support libraries in Nigeria provide a wide variety of library services to the fisheries scientists. However, services like SDI, provision of current journals, inter –library loans, compilation of bibliography, publication of tables of content of new journals, publication of accessions list of new materials and translation of foreign language periodicals are either not provided or inadequate in the libraries.

iii. Majority of the fisheries scientists in Nigeria make use of their institutions' libraries frequently for research-related information needs and for general reading. They find journals and books most useful.

iv. There are significant relationships between the independent variables namely, availability of library resources, availability of library services, adequacy of services provided by libraries, use of library resources, use of library services and the dependent variable (publications output of the fisheries scientists).

v. There is significant joint influence of the independent variables on the dependent variable.

vi. Only four out of the five independent variables showed significant relative influence on publication output of the fisheries scientists. These are availability of library resources, use of library resources, availability of library services and use of library services. Adequacy of library services did not have significant relative influence on publication output of the fisheries scientists.

vii. There is no significant relationship between availability of library resources and publication output of fisheries scientists in Nigeria, this means that beyond availability, the library resources must be used for increased publication output.

viii. There is significant relationship between availability of library services and publication output of fisheries scientists in Nigeria.

ix. There is no significant relationship between adequacy of services provided by the libraries and publication output of the fisheries scientists.

x. There is significant relationship between use of library resources and services and publication output of the fisheries scientists in Nigeria.

xi. There is significant relationship between use of library services and publication output of fisheries scientists in Nigeria.

5.3 Implications of the Findings

The findings of the study have implications for various stakeholders as follows:

5.3.1 Fisheries research support libraries:

The study revealed that library resources that are not related to computer based library services are fast getting out of stock in the fisheries research support libraries in Nigeria. The implication of this is that all the libraries must ensure the automation of their operations so that none is left behind in the current trend of modern librarianship which is automated library operations.

It was also established that some library services, notably, provision of current journals, are either not provided or inadequate in the libraries. The implication of this

is that many of the fisheries scientists might seek to satisfy their information needs from sources other than their institutions' libraries. If this happens, the libraries would be rendered irrelevant in the system.

Majority of the fisheries scientists make use of their institutions' libraries frequently for research-related information needs and for general reading. They find journals and books as most useful resources. This has the implication that the libraries would enjoy a great deal of relevance in the scheme of affairs in the institutions. Some of the scientists, however, do not use their institutions' libraries frequently. The implication is that the libraries have much work to do in the areas of user education and awareness creation for the libraries' resources and services.

5.3.2 Fisheries scientists in Nigeria:

Since the study revealed that some fisheries scientists do not use their institutions' libraries frequently and some find some of the library resources inaccessible because of reasons such as inexperience in the use of such resources and lack of adequate ICT skills, there is the implication that the scientists would find it difficult to plan and execute research; since research depends a great deal on information. The library is at the centre of information provision for fisheries research. It follows, therefore, that fisheries scientists who find the resources and services of the fisheries research libraries inaccessible, are bound to have low level of productivity (publication output).

The study shows that there is significant relationship between use of library resources and services and publication output. The implication of this is that fisheries scientists must make use of the resources and services of their institutions' libraries for enhanced publication output.

5.3.3 Fisheries Institutions and Departments in Nigeria:

The study revealed that majority of the fisheries scientists in Nigeria make use of their institutions' libraries frequently for research-related information need and for general reading and that they find journals and books as most useful library resources.

This has implications for the fisheries institutions and departments in Nigeria. If they do not adequately support their libraries for effective and efficient information provision, it will reflect in the level of publication output of their fisheries scientists. Consequently, the relevance of the institutions and departments would be negatively affected.

5.3.4 Fisheries Society of Nigeria (FISON):

The study found a majority of males among the fisheries scientists in Nigeria, confirming earlier studies which have reported male dominance of the profession in the country. As the umbrella organisation that brings together all fisheries scientists, institutions and organisations in Nigeria, FISON is in a position to encourage women participation in the profession so as to achieve some level of gender balance. By this also, the society would contribute to national development through job creation especially for women generally and particularly the rural women. As a result of availability of land and water for fisheries development, they are likely to develop interest in fisheries.

5.4 Contribution to Knowledge

The study contributes to knowledge in the following ways:

i. It has developed a conceptual model to explain the relationship that exists between availability of library resources, availability of library services, adequacy of library services, use of library resources, use of library services and publication output of fisheries scientists in Nigeria.

ii. Library resources, services and use of the fisheries libraries in Nigeria influence publication output of fisheries scientists in the country. Consequently, the adequacy and effectiveness of information resources and services of the fisheries research libraries and the timeliness of information delivery reflects on the publication output of the fisheries scientists in Nigeria.

iii. Inadequacy in the provision of library resources and services by the libraries to the fisheries scientists leads to low level of patronage of the libraries by the scientists and consequently to their dependence on sources other than their institutions' libraries for their research and information needs. This has far reaching implication on their time and effectiveness.

5.5 Conclusion

Publication output of fisheries scientists is a major determinant of their productivity and by extension, their relevance in their institutions. The fisheries research libraries are at the centre of information provision for support of fisheries research. The availability and adequacy of library resources and services, coupled with the use made of them by the fisheries scientists affect the effectiveness of the libraries in providing the much needed information support to the scientists.

Based on the findings of the study, it can be concluded, therefore, that for effective and efficient information support to the fisheries scientists by the fisheries research libraries, there is much need for the fisheries institutions and other stakeholders to adequately support the fisheries research libraries in Nigeria for an increase in their productivity level.

5.6 Recommendations

The following recommendations are proffered, based on the findings of the study, for the enhancement of publications output of fisheries scientists in Nigeria:

i. Fisheries research support libraries in Nigeria should make available a wide variety of library resources in different formats to support fisheries research. They should provide current library resources especially journals and books as majority of the fisheries scientists find these most useful in the libraries.

ii. They should also provide an array of information services so that the fisheries scientists may have the opportunity of making choices in information seeking.

iii. The libraries are to encourage adequate use of their resources and services by intensifying their user education efforts. For instance, they can embark upon more vigorous SDI and CD-ROM services.

iv. Fisheries research institutions and departments should adequately support the fisheries research libraries so as to empower them for effective and efficient services in the provision of the needed information support to the fisheries scientists.

v. Fisheries scientists in Nigeria should endeavour to improve their information searching skills such as ICT skill and experience acquisition in the use of the resources of their institutions' libraries. This is very important if they must avail themselves of the benefits of the resources and services of the libraries.

vi. It is recommended that the parent institutions of fisheries research support libraries should ensure adequate funding of the libraries in order to enable them keep pace with the fast changing world of ICT in information services.

vii. Fisheries research libraries should acquire more of electronic information resources in order to be compatible with trends in modern librarianship. However they should ensure adequate education of their users because these resources can only be harnessed if their users become mutually computer literate.

viii. Fisheries research institutions in Nigeria should make ICT proficiency to be one of the basic requirements for the employment of fisheries research scientists in their various institutions. This will enable the scientists to have easy access to the resources and services of the institutions' libraries.

5.7 Limitations of the Study

Major challenges encountered during the course of the study which constituted limitation to the study were:

i. The fisheries scientists' unwillingness to disclose certain information which they considered personal and sensitive such as their salary grade/level, their ownership of personal information materials and their number of publications.

ii. Many of the respondents were not well disposed towards attaching a photocopy of the section of their curriculum vitae that shows their publications. This made it difficult to assess the level of publication output of the scientists and also to determine their level of international visibility.

5.8 Suggestions for Further Research

The following suggestions are proffered to aid other researchers in conducting further research based on the study:

i. The study focussed on the influence of library factors on the fisheries scientists' publication output. It is suggested that the influence of other factors such as work conditions, research facilities and personal attributes of the researcher on his publication output be investigated.

ii. The focus of the study was the publication output of the fisheries scientists in the public sector. It is suggested that those of the fisheries scientists in the private sector such as those working in private institutions, be investigated.

REFERENCES

Abel, A. 1998. Skills for the 21st Century. *Journal of Librarianship and Information Science* 30.4:211-214.

Abels, E; Liebscher, P. and Denman, D. 1996a. Factors that influence the use of electronic networks by science and engineering faculty of small institutions. Part 1- Queries- *Journal of the American Society for Information Science* 47.2:146-158.

_____, _____ and _____ 1996b. Factors that influence the use of electronic networks by science and engineering faculty of small institutions. Part 2- preliminary use indicators. *Journal of the American Society for Information Science* 48.6:496-507.

Adams, J.A. and Bonk, S.C. 1995. Electronic information technologies and resources: use by university faculty and faculty preference for related library services. College and research Libraries 56. 119 - 131.

Adeniji, M.A; Adeniji, S.E. and Oguniyi, S; 2010. Availability and use of ICT in Olabisi Onabanjo University Library. Retrieved Jul. 20, 2011, from: http//www.unllib.unl.edu/LPP/PNLA Quarterly/a

Adio, G. 1993. The use of the IITA library by the agricultural scientists of the University of Ibadan. *IAALD Quarterly Bulletin* XXViii, 27-32.

Agba, D.M., Kigongo-Bukenya, I.M.N. and Nyumba, J.B. 2004. Utilization of Electronic information resources by academic staff at Makerere University of Dares Salaam. *Library Journal*, 6(1): 18-29.

AGORA: Access to Global Online Research in Agriculture. Retrieved May 19, 2011 from: http://www.aginternetwork.org.

Aguolu, C.C. and Aguolu, I.E.2000. Libraries and information management in Nigeria: seminal essays on themes and problems. Maiduguri. Ed-Linform Services: 158-182.

Aina, L.O. 2002. Research in information science an African perspective Ibadan: Stirling-Harden publishers. 220p.

Aina, L.O. 2004. Library and information science text for Africa. Ibadan: Third World Information Services. 365p.

Alasa, M. and Ikechukwu, I. 1999. Internet and academic library development in Nigeria. *Nigerian Libraries*, 33(1): 17-29.

Alemma, A.A., Chifwepa, V. Rosenberg, D. 2000. African journals: an Evaluation of their use in African universities. *African Journal of Library, Archives and Information Science*, 10(2): 93-111.

Ali, A. 2004 Application of information technology in the educational media libraries in Delhi. Proceedings of the XXIATLIS National Conference on Globalization of Library and information Science Education University of Madras, Chennai). 89 – 96.

Anon, 2000. Communication from the commission to the council and the European Parliament.com (2000) 724, Brussels: European Commission, 20pp.

Aquaculture and Inland Fisheries Project 2004a. Inventory of fish farms in Nigeria: Annex ii of the technical report of the national special programme for food security with the agriculture development programme in all states and FCT.

Aquaculture and Inland Fisheries Project 2004b. Inventory of reservoirs and lakes In Nigeria: annex iii of the technical report of the national special programme for food security with the agriculture development programme in all states and FCT.

Arunachalam, S. And Balaji, J. 2001. Fish science research in China: how does it compare with fish research in India? *Scientometrics*, 52 (1), 13 – 18.

Asamoah-Hassan, H. 1999. A library ready for 21st century services: a case of the University of science and technology library, Kumasi, Ghana. Retrieved March 22, 2007, from: http://www.aitul.org/conference/pretpap/asamoah/. html.

ASFA: Aquatic sciences and Fisheries Abstracts. Retrieved May 19, 2011 from http://www,csa.com/factsheets/aquchust-set-c.php.

Ashdown, B. and Smith, K. 1999. Development of a model for managing organisational knowledge. Inforum'99. Oak Ridge: 5-6 May, 1999. Retrieved May 8, 2009, from: http://www.osti.gov/bridge//product.biblio. jsp? Avery.

Awojobi, E. A. And Madu, E.C. 2004. The use of library resources at the Olabisi Onabanjo University Ago-Iwoye, Nigeria by lecturers in the faculty of science and college of Agricultural sciences Gateway Library Journal 8 (1/2): 50-59.

Babu, A.R and Singh, Y.P. 1998. Determinants of research Productivity. *Scientometrics* vol 43 no. 3: 304-329.

Baird, L. 1986. What characterized a productive research department? Res. Higher Education 25: 211-225

Baird, L. 1991. Publication productivity in doctoral research department: inter-disciplinary and intra-disciplinary factors. Res. Higher Education. 32: 303 – 318.

Baldwin, N.S. and Rice, R.E. 1997. Information seeking behaviour of security analysts: individual and Institutional influences, information sources and channels outcomes. *Journal of the American Society of Information Science* vol. 48, no 8: 674-693.

Barnes, F. And FAO. 1981. Fish technology library services in the IPFC region. *IPFC occasional paper*. Rome, FAO. 39pp.

Baron, J. 1998. EURASLIC: A European information network for fisheries and Aquatic sciences *EC. Fisheries cooperation bulletin* Vol. 11 No.1 p.25.

Bassey, B.A. 2006. User satisfaction with services in three academic libraries in Cross River State: A comparative study. Gateway Library Journal 9 (2): 23- 24.

Baughman, S. 1983. Social science sponsored researchers: their use of academic libraries. Collection Management 5(3/4): 53-68.

Beagrie, N. 2004. The continuing access and digital preservation strategy for the UK Joint Information Systems Committee (JISC). Retrieved May 22, 2009, from http://www.dlib.org/dlib/july 04/beagrie/07 beagrie.html.

Bell, J., and Seaters, J. 1978. Publishing performance: departmental and individual. Econ. Inq. 16:599 – 615.

Bellas, and Toukoushian, R. 1999. Faculty time allocation and research productivity: Gender, Race and family effects. Rev. Higher Educ. 22: 367 – 390.

Bello A. And Musa I.F. 2005. Information needs and information behaviour of postgraduate students. A case study of the University of Abuja, Nigeria Gateway Library Journal 9 (2) 23 -24.

Berghe, H.V. et al 1998. Bibliometric indicators of university research Performance in Flanders. *Journal of the American society for information science* 49. 1: 59 - 67.

Bertin, P; Vacari, I; Simao, V. and Visoli, M. 2008. Information management at the Brazilian Agricultural Research Corporation. Retrieved May 16, 2011, from http://www.ainfo.coptia.embrapa.br/index.php.

Bonzi, S. 1992. Senior faculty perception of research productivity in: *Proceedings of the ASIS annual meeting, 29*. Washington D.C. knowledge Industry Publications: 206-211.

Borokhovich, K. Bricker, R; Brunarski, K., and Simkins, B. 1995. Finance, research productivity and influence. J. Finance 50: 169 – 1717.

Buchmueller, T; Dominitz , J., and Hansen, W. 1999. Graduate training and the only career productivity of Ph.D economists. Econ. Educ. Rev. 18: 65 – 77

Bright, S.M. 1999. Information seeking behaviours and use of social scientists in Mexico university. *Arkansas Libraries*, 55(7): 20-30.

Buckland, M.K. 991. Information as thing. *Journal of the American Society for Information Science*, 42(5): 351-360.

Budd, J.M. 1989. Research in the two cultures: The nature of scholarship in Science and the humanities. *Collection management* 11. 3&4: 1-21.

Budd J.M. 1995. Faculty publishing productivity: an institutional analysis and comparison with library and other measures. *College and Research Libraries*, vol. 56 no 6: 547-554.

Bruce, H. 1998. User satisfaction with information seeking on the internet. *Journal of the American society for information science* 49. 6: 541-556.

Cai, J. and O'Kefee, R. 1993. Disseminating Agricultural science information by journal publishing in China. *IAALD Quarterly Bulletin* xxxviii (i).

Canada. Department of Fisheries and Oceans. 1998. Canadian Code of Conduct for responsible Fisheries: Concensus code 1998. Retrieved May 22, 2009, from: http://www.dfompo.gc.ca/communic/fishman/code/ccrfo-cccppre.htm.

Campbell, J. And Salagrama, V. 2001. New approaches to participation in Fisheries research. *FAO Fisheries Circular* Number 965. Rome, FAO. 50pp.

Collins, J. And Kaba, F, K. 2003. Directory of Fisheries and Aquaculture Information Resources in Africa. FAO fisheries technical paper number 416. Retrieved Sept. 08, 2006, from: http://www4.fao.org/fishdir.

Creamer, E. 1998, Assessing faculty publication productivity issues of equity. ASHE-ERIC Higher Education Report vol. 26 No 2. The George Washington University, Graduate school of Education and Human development. Washington. DC.

Curtis, K. L; Weller, A. C. And Hurd, J. M. 1997. Information seeking of health science faculty: the impact of the new information technologies. *Bulletin of the Medical Library Association*, vol 85, no. 4: 402-410.

Dada, B.F. 2003. Contribution of fisheries to employment, national economy and food security in Nigeria. Paper delivered at the 2003 FISON public lecture: the way forward for Nigeria. Lagos: Fisheries Society of Nigeria (FISON).

Daft, R.L. and Lengel, R.H. 1984. Information richness: a new approach to managerial behaviour and organisational design. In: Commings, L.L. and Staw, B.M. (Eds.), *Research in organisational behaviour* 6, (191-233).

Hewitson, A. 2002. Use and awareness of electronic information services by academic staff at Leeds Metropolitan University a qualitative study. Journal of Librarianship and information science 34 (1) 43 – 52.

Homewood, I.L: JAI press. Retrieved August 23, 2009, from: http://www.taw.utwente.nl/theorieenoverzicht/theory%20clusters/mass%20media/mediarichnesstheory.

Daft, R, L; Lengel, R.H. and Trevino, L.K. 1987. Message equivocality, media Solution and manager performance: implications for information systems. M15 Quarterly, 355-366. Retrieved August 23, 2009, from: http;//www.taw.utwente.nl/theorieenoverzicht/theory%20clusters/mass%20media/mediarichnesstheory.

De Groot, H; McMahon, W. And Volkwein, J. 1991. The cost structure of American research univefsities. Rev. Econ. Stat. 73: 424 - 431

Des Clers, S. 2001. Information required by fishers to make sustainable economic Decisions. *Proceedings of the EXPO'98 conference on Ocean Food Webs and Economic Productivity*, Lisbon (Portugal), 1-3 July, 1998. ACP-EU Fisheries Research Reports. Number. 5.

Dervin, B. 1998. Sense-making theory and practice. Retrieved February 11, 2009 from http://communication. Sbs. Ohio-State. Edu.

Dervin, B and Nilan, M. 1986. Information needs and uses retrieved from: http:/sara 510. blogspot.com.

Dizon, L.B. and Sadorra, M.S.M. 1995. Patterns of publications by the staff of an International fisheries research centre. Scientometrics 32 (1) retrieved April 28, 2009, from: http://www.springerlink.com.

Dodge, B. R. 1999. Information accessibility. Retrieved Nov 30, 2006 from http:/www.cam.org/article.phpz/idarticle600.

Duff, S.S. 1999. Some post war models and information chain. *Journal of Librarianship and information science* 29.4: 197-187.

Dundar H., and Lewis, D. R. 1998. Determinants of research productivity in education. Res. Higher Educ. 39: 607 – 631.

Edelson, D.C. and Gordin, D.N. 1996. Adapting digital libraries for learners: Accessibility vs. availability. D – Lib magazine. Retrieved Nov. 11, 2006, from http://www.vecam.org.

Eluagu, L.S. 2005. A guide to the design, execution and reporting of research Projects.-Okigwe: Fasmen Educational and Research Publications. p.8.

Ezeala, L.O. and Nwalo, K.I.N. 2011. Correlation between productivity and the use of the library by Nigerian agricultural research institute research officers. Library Philosophy and Practice 2011. Retrieved July 8.2011.

FAO. 2000. Fisheries and aquaculture library resources and services. Retrieved April 28, 2009, from: http://www.fao.org/fishery/org/fbl.

FAO.2004a. AGORA: Access to Global Online Research in Agriculture. Retrieved Sept. 08, 2006, from: http://www.aginternetwork.org/en/.

_____2004b. Aquatic and fisheries abstracts. Retrieved Sept. 08, 2006, from: http://www.fao.org/fi/asfa.asp.

_____2004c. FAO fisheries department of Information strategy, Rome.

_____2007. Fisheries information in developing countries. Retrieved April 28, 2009, from: http://www.fao.org/docrep/007/y5847e04.htm.

Federal Department of Fisheries. 2007. Fishery statistics of Nigeria: 1995-2007. 6.

Federal Ministry of Agriculture and Rural Development, Federal Department of Fisheries 2003. Presentation on the fisheries development subsector at the presidential forum.

Ford, N. 1986. Psychological determinants of information needs: a small-scale Study of higher education students. *Journal of Librarianship*, Vol 18 No 1, pp 47-61.

Fox M. 1992. Research, teaching and productivity: mutuality versus competition in academic. Social Educ. 65: 293 – 305.

Friedlander, J. 1973. Clinical search for information. *Journal of the American Society of Information Science*, vol. 42: 65-69.

Golden, J. And Carstensen, F.V. 1992. Academic research productivity, department size and organisation: further results, comment . Econ. Educ. Rev. 11: 153 - 160.

Griffiths, J. 1992. How library and information services in the United States indicate value. In Thawley, J. (ed) The value of library and information services. Papers at a seminar held in Melborne. CS1RO: 33-41.

Haladu, H. 1998. Information seeking behaviour of social science academic in Ahmadu Bello University, Zaria. *Niger Biblios*, 14 (14); 1-14.

Hanif, U, Zabed Ahmed, S.M. and Nasir, U.M. 1997. Adequacy of reading resources and the satisfaction of the information needs of the faculty members: A case study of the Dhaka University Library. Retrieved April 10, 2009, from: http://infosciencetoday.org.

Haneefa, M.K. 2007. Use of ICT based resources and services in special libraries in Kerala. Annals of Library and information studies vol. 54: 23-31.

Hecht, T. 2004. Access to information – the Achilles heel of African fisheries science and technology. Report and papers presented at the regional workshop on networking for improved access to fisheries and aquaculture information in Africa. Grahamstown, South Africa, 3-7 November, 2003. Retrieved April 15, 2007, from: ftp://ftp.fao.org/docrep/fao/007/y5519600.pdf.

Hernon, P. 1979. Use of government publications by social scientists. Libraries and Librarianship, vol. 1. Norwood, N.J. Ablex Publishing. 197.

Hinson, R. 2006. The internet for academics: towards a holistic adoption model. Online Information Review 30(5): 542-554. Retrieved Jan. 03, 2009, from: http://www.emeraldinsight.com.

Hiscock, J. E. 1986. The prime technical information source: the local work environment. Human factors 10 (4): 430 – 432.

Hobhom, H. 1999. Social science information and documentation: is the time ripe for a state of the art? A paper presented at *the 65th IFLA Council and general conference*, Bangkok, Thailand, August, 20-28. 1-6.

Hughes, C. 1999. Faculty Publishing Productivity: the emerging role of network connectivity. *Campus-wide Information Systems*, vol. 16 no. 2: 30-35.

Hurych, J. 1986. After Bath: scientists, social scientists and hemanities in the context of online searching. *Journal of Academic Librarianship*, 12: 158-165.

Ibeun, M.O. 1995. Meeting the information needs of scientists and policy makers in the Fisheries industry: PhD. Thesis. University of Ibadan, xv + 197pp.

———— 2001. Applied bibliometrics and cooperative acquisition as tools for selecting journals and sharing in Nigerian fisheries libraries. *African Journal of Library, Archives and Information Science*, 11(1): 39-47.

———— 2001. Directory of human resources in Nigerian fisheries and aquatic sciences. NIFFR occasional paper 2 viii .

———— 2004. Information needs and feasibility for a national focal point for the exchange of inland fisheries and aquaculture information in Nigeria. Report and papers presented at the regional workshop on networking for improved access to fisheries and aquaculture information in Africa. Grahamstown, South Africa, 3-7 November, 2003. Retrieved April 15, 2004, from: ftp://ftp.fao.org/docrep/fao/007/y5519600.pdf.

Ibeun, M.O. and Madu, I.D. 2002. Application of citation analysis to library management with reference to Nigerian fisheries and aquatic sciences literature. *Journal of librarianship and information science in Africa*. 2.2: 60-69.

Ifidon, S.E. 1988. Measuring use and non-use of bibliographic resources in libraries. Paper presented at the annual seminar of the academic/research libraries section of the Nigerian Library Association, University of Jos. 31 Oct-3 Nov; p.38.

Igbeka, J.U. 2001. Information management and decision making in organizations: a case study of NBTE, Kaduna: M.Ed. Thesis. University of Ibadan p 51-53.

Information Technology- MRAG Asia Pacific- Marine Resources. Retrieved Jul. 15, 2011 from http://www.mragasiapacific.com.au/index.

International Association of Aquatic and Marine Science Libraries and Information Centres, African Regional Group of IAMSLIC Water Research Institute of the Council for Science and Industrial Research. 2003. *Proceedings of 1st Africa regional group conference*: Accra-Ghana 14th-16th July 2003. Retrieved Aug. 04, 2007, from http://www.iamslic.org/pub/ afraimslicproc2003. pdf.

International conference on grey literature, 3rd. 1998. Perspective on the design and transfer of scientific and technical information: *3rd international conference on grey literature*, Luxembourg, 13-14 November, 1997. Amsterdam, Trans Atlantic Greynet.293pp.

Information System. Retrieved Feb. 23, 2009, from: http://www.idrc.org.sg/en/ev-36592-201-1-DOTOPIC.htm.

Irechukwu, P; 2007. The Digital Library: Prospects and challenges to developing countries. Nigerian library Link: A Journal of Library and Information Science 5(1) 13-18.

JAMB – Unified Tertiary Matriculation Examination Brochure 2010/2011 Academic Session.

Jimba, S.W. (2000). An assessment of the use of information technology among scientists in selected agricultural research libraries: PhD. Thesis. University of Ibadan pp 63-67.

Jimba, S.W. and Atinmo, M.I. 2000. The influence of information technology access on agricultural research in Nigeria. Retrieved April 28, 2009, from: http://www.emeraldinsight.com.

Johnes, J., and Johnes, G. 1995. Research funding and performance in U.K. University departments of economics: A frontier analysis. Econ. Educ. Rev. 14: 301 – 314.

Jordan, J., Meador, M., and Walters, S. 1988. Effects of department size and organization on the research productivity of academic economists. Econ. Educ. Rev. 7: 251 – 255.

Kemoni, H.N. 2002. The utilization of archival information by researchers in Kenya: *African Journal of Library, Archives and Information Science*, 12(21): 69-80.

Lonnqvist, H. 1973. Evaluation of library service, an application of need/opportunity analysis through questionnaires. Ph.D Thesis, University of Nebraska

Lorenz, J.D. 1973. Evaluation of library services, an application of scientific productivity Journal of the Washington Academy of science 16 (12) 317 – 323

Lancaster, F. W. 1977. Guidelines for the evaluation of information systems and services. Paris, UNESCO p. 15.

Mallaiah, T. Y., Kumbar, S.S., and Mudhol, M. V. 2008 use of Library in Mangalore University Library: A study of users' opinion. In Patil D.B. and Kooganuramath, M.M. (ed) Library and Information Science. New Delhi: APH Publishing corporation. PP. 154 – 166.

Mallaiah, T. Y., Kumbar, S.S. and Mudhol, M.V. 2008. Use of Library in Mangalore University Library: A case study of Users' opinion. In Patil D. B. and Kooganuramath, M.M. (ed) Library and Information Science. New Delhi APH publishing corporation PP 154 – 166.

Mallaiah, T.Y. Kumbar, S.S. and Patil, D.B. 2008. Use of library in Mangalore University Library:A study of user's opinion. In Patil, D.B. and Kooganuramath, M.M. (eds). Library and information science. New Delhi: A PH Publishing corporation: 133 – 156.

Martin, B.R and Irvine, J. 1993. Study of scientometric indicators and the evaluation of research. Retrieved June 06, 2006 from http://www docs/goggle.com/gview.

Mckenzie, J. 1999. The Research Cycle. From now on: The Educational Technology Journal 9 (4). Retrieved July 10, 2009 from http://questioning.org.

Meadow, C.T. & Yuan, W. 1997. Measuring the impact of information: defining the concepts. *Information Processing and Management* 33(6): 697-714.

Milne, P. 2002. Electronic access to information and its impact on scholarly communication. Retrieved Feb. 10, 2006, from http://www.csu.edu.au /special/online99/proceedings99/305b.htm.

Mugybus, J.F.LL. 1999. User education and information skills. A need for a systematic programme in African University Libraries. *African journal of library, Archives and Information Science* 9(2): 129-141.

Muir, J.F. et al (eds) 2005. Hidden harvests unlocking the potential of aquaculture in Africa. NEPAD/world Fish Centre, fish for all summit held in Abuja, Nigeria: 22-25 Aug, 2005 p29.

Neclameghan, A. 1985. User orientation in library and information studies curriculum: some aspects with special reference to developing countries. *African Journal of Library, Archives and Information Science* 10(1): 53-65.

NEPAD-FAO.2006. Nigeria: NEPAD-CAADP National Medium-Term Investment Programme (NMTIP). Comprehensive African Agriculture Development Programme. ICP/NIR/2906(1) (NEPAD ref 06/44E) 95pp.

NEPAD/World Fish Centre 2005. Hidden harvests-unlocking the potentials of aquaculture in Africa. Technical review paper-aquaculture. NEPAD-Fish for all summit held at Abuja, Nigeria: 22-25 August, 2005. p29.

Ngulube, P. 2002. Managing and preserving indigenous knowledge in the knowledge management era: Challenge and opportunities for information professionals. *Information Development*, 18(2): 95-102.

Nicholas, D., Erbach, G. and Paalman, K. 1987. End users of online information systems: an analysis. Journal of Academic Librarianship 2(2) 105-106. Retrieved Jul. 21, 2011 from: http://www.inventiveascent.com.

Nkanu, W.O. and Okon, H.I; 2010. Digital Divide: Bridging the gap through ICT in Nigerian Libraries. Library Philosophy and Practice. Retrieved Jul. 20, 2011, from: http//www.digitalcommons.unl.edu/libphilprac/492.

Northwest Association of Schools and Colleges Accreditation Handbook. 1999. Retrieved Oct. 20, 2009, from http://www.uaa.alaska.

Noser, T., Manakyan, H., and Tanner, J. 1996. Research productivity and perceived teaching effectiveness: a survey of economics faculty. Res. Higher Educ. 37: 299 – 321.

Nwalo, K.I.N. 1997. Measures of library effectiveness in Nigerian polytechnic libraries with emphasis on user satisfaction. PhD. Thesis. Dept. of Library, Archival and Information Studies. University of Ibadan.

Ogunsola, A; 2004. Information and Communication technology: present global trends. Journal of information science 3(1) 25-33

Ojedokun, A.A. and Owolabi, A.A. 2003. Internet access competence and the use of internet for teaching and research antivities by University of Botswana academic staff. *African Journal of Library, Archives and Information Science*, 13(1): 43-53.

Ojo-Ade, C.O. and Jagboro, K.O. 2000. Subject catalogue use at the Hezekiah Oluwasanmi library, Obafemi Awolowo University, Ile-ife, Nigeria. *African Journal of Library, Archives and Information Science*, 10(2): 177-186.

Okiy, R.B. 2000. Assessing students and faculty use of academic libraries: The case of Delta State University Library, Abraka. *Nigerian Journal of Library and Information Science*, 4:52-60.

Olayinka, A.I. and Owumi, B.E.2006. Preparing a research proposal. In A.I. Olayinka et al (Eds). Methodology of Basic and Applied Research Ibadan: The postgraduate School, University of Ibadan. Pp.37-52.

Omagbemi, C; Akintola, B. and Olayiwola, I; 2004. Academic Libraries, the internet and its potential impact on teaching and learning in Nigerian tertiary institutions. Journal of Library and Information Science 1(1) 35-40.

Omekwu, C. and Echezona, C; 2008. Emerging challenges and opportunities for Nigerian Libraries in a global service. Paper presented at the Nigerian Library Association 46th annual national conference, 1-6 june, 2008. Pp 63-76.

Onwubiko, M.C. 2005. Use of university library resources by sandwich students of Abia State University, Uturu. Gateway Library Journal 8 (1/2): 42-49

Palmer, C, L. 1999. Structures and strategies of interdisciplinary science. *Journal of the American Society for Information Science*. 41(6):231-242.

Pinelli, T.E., Kennedy, J.M. and Barday, R.O. 1990. The role of the information intermediary in the diffusion of aerospace knowledge. Science and Technical services, 11 (2): 59 – 76.

Popoola, S.O. 2000. The use of information products and services in social science research in Nigerian universities. *African Journal for the Psychological study of social issues*. 5(2): 296-308.

_____,2008. The use of Information sources and services and its effects on the and practice Retrieved April 23, 2008, from: http://www.webpagesuidaho.edu/umbolin/popoola.htm.

Popoola, S.O. and Zaid, Y.A. 2007. Faculty awareness and use of library information products and services in Nigerian universities. *Library Progress (International)* 27(2): 127-137.

Poter, S., and Umbach, P. 2001. Analysing faculty workload using multilevel modeling. Res. Higher Educ. 42: 171 – 196.

Rehman, S. and Ramzy, V. 2004. Awareness and use of electronic information resources at the health sciences centre of Kuwait University. Library Review 53 (3) 150 – 156.

Roberts , J.M. 1995. Faculty knowledge about library services at the university of West Indies. *New Library World*, 96(119): 14-23.

Roberts, S.A. 1980. Social sciences libraries and collections. In kent, A. Et al. Encylopedia of library and information science, vol. 28. New York: Dekker pp.60-94.

Rosenberg, D. 1997. University Libraries in Africa: a review of their current status and future potential. London: International African Institute.

Roy, C. 2006. Accessibility. Retrieved Nov. 30, 2006, from http/www.cam.org/ article.phpz/id article-610.

Savolainen, V. 1992. Perspectives of information systems. Retrieved March 10, 2009 from: http://books.goggle.com.ng.

Scheme of service for Federal Research Institutes, Colleges of Agriculture and Allied Institutions in Nigeria.

Schuchman, H. 1. 1981. Information transfer in Engineering. Glastonbury, C .T: The futures Group: 256 – 371

Schumancher, A.1996. A small college information system: an analysis and recommendations. Hamline University St. Paul, MN.111-112.

Sharma, S. 1999. Information technology in special library environment. DESIDOC Bulleting of Information Technology 19 (6): 17 – 30.

Soper, M. E. 1976. Characteristic and use of personal collections. Library Quarterly, vol. 44: 397 - 415.

Startup , R. 1979. The university teacher and his world: a sociological and educational study. Westmead: Saxon House: 221 - 227

Steel, R.A. 1996. Academic branch libraries relations with local faculty, in Simonton, W.(ed). *Advances in librarianship*. 14. New York-Academic Press.

Stoan, S.K. 1991. Research and information retrieval among academic researchers: implications for library instruction. *Library Trends*, 39: 238-258.

Subbaiah, R. 2007. Conceptual framework for an Indian National Agricultural Information System (INAGRIS). *Library Herald 45(3)* 225-248 Retrieved Aug. 1, 2011 from http://eprints.rclis.org/copyright.

Sulo, T. Kendagor, R. Kosgei, D., Tuitock, D. And chelangat S. 2012 factors affecting research productivity in public universities of Kenya: The case of Moi University, Eldoret. Journal of emerging Trends in Economics and Management Sciences (JE TEMS) 3 (5) 475 – 478.

Tan,D.1986. The assessment of quality in higher education: A critical review Ras. Higher Educ.24:223-262

Todd, R.T. 1999. Back to our beginnings: Information utilisation. Brookes and the fundamental equation of information science. Information Processing and management vol 35, issue 6 November, 1999. P851. Retrieved July 13, 2009, from: http://www.sciencedirect.com/science.

Toutkoushian, R.K., Porter, S. R., Danielson. C. and Hollis, P.R. 2003. Using publications counts to measure an institution's research productivity. Research in Higher Education 44 (2): 285 – 289.

Tyagi, K.G. 1994. Information sources in the social sciences. Inspel, 28: 405-415.

Udoudoh, S.J. (2009). Academic library services and the development of education in Niger State of Nigeria in the 21st Century. A paper presented at the *Nigerian Library Association, Niger State chapter 1st annual conference* 26th March, 2009. P3.

Uhegbu, A. 2001. The information use: issues and theme. Enugu: John Jacob's Classic publisher.

Conference on Science. Budapest (Hungary). 26 June – 1 July, 1999.

Verma, R. 1988. Agricultural productivity by indigenous technology: proceedings of Nigerian Society of Agricultural Engineers 6 (2) 13-17.

Vicente, A; Crawford, J. And Clink, S. 2004. Use and awareness of electronic information servi es by academic staff at Glasgow Caledonian university Library review 53 (8). 401 - 407

Webster, J. G. and Collins, J. 2005. Fisheries information in developing countries. Support to the implementation of the 1995 FAO code of conduct for responsible fisheries. *FAO fisheries circular* no 1006. Rome, FAO. 127p.

Webster, J., Merrikin, P. and Collins J. 2000. Searching down the fisheries information web: an initial reflection. Retrieved Aug. 2, 2011 from http://www.ftp://ftp.fao.org/docrep/fao/article/244874.pdf

White, M.D. 1975. The communications behaviour of academic economists in research phases. Library Quarterly vol. 45: 337 – 353.

Wood, R.C. 1995. Assessing publications output as an indicator of academic productivity: the case of hospitality management. *Tourism Management* 16 (3) 171-173.

WorldFish Centre, 2005. Fish and food security in Africa. WorldFish Centre, Penang, Malaysia.

Zainab, A. N. 2001. Library resources and services and publication productivity. *Malaysian Journal of Library and Information Science*, vol. 6, no. 1. p. 71-91.

Zaki, N.1991. User education in Nigerian universities: the need for new approaches. *International Library Movement*, 13(1): 27-43.

Zhang, W. 1998. Analysing faculty and staff's information needs and use of electronic technologies: a liberal arts college's perspective. *Journal of Educational Media and Library Resources*, vol. 35, no. 3: 218-241.

Zhen, H. And Stewart, A. 2002. Assessing the performance of public research universities using NFS/NCES data envelopment analysis technique. AIR prof. File 83: 1-21.

Zhou, X. and Subasinghe, R. 2010. Expert panel presentation v. 4. Information and data needs: a strategy for improving aquaculture statistics. Book of Abstracts, Global Conference on Aquaculture 2010, 22-25 September, 2010. FAO/NACA/Thailand Department of Fisheries. Phuket, Thailand.

APPENDIX 1

FISHERIES SCIENTISTS' QUESTIONNAIRE ON LIBRARY USE (FSQLU)

Department of Library, Archival and Information Studies,
University of Ibadan,
Ibadan.
20th August, 2009.

Dear Respondent,

RESEARCH QUESTIONNAIRE FOR FISHERIES SCIENTISTS

This questionnaire is aimed at collecting information for a doctoral research on the resources, services and use of fisheries libraries by fisheries scientists in Nigeria.

Kindly respond to the questions as honestly as possible as your response will be treated with utmost confidentiality. All responses will be used purely for academic purposes for a successful completion of the study.

Thank you for your co-operation.

Ijeoma Doris Madu
Ph.D research student

SECTION A: PERSONAL DATA

For each of the following questions, please indicate your response by a tick (√) in the appropriate box

1. Name of Institution……
2. Gender: Male ☐ Female ☐
3. Age range: 20 – 30 ☐ 31- 40 ☐ 41-50 ☐
   51 - 60 ☐ 61 and above ☐
4. What is your department/programme? .....
5. What is your area of research interest?……
6. For how long have you been a fisheries scientist?
   1 – 5yrs ☐ 6 – 10yrs ☐ 11 – 15yrs ☐
   16 – 20yrs ☐ 21 – 25yrs ☐ 26 – 30yrs ☐
   31 - 35yrs ☐
7. What is your cadre/ status?
   Researcher ☐ Technologist ☐
   Lecturer ☐ Instructor ☐
8. What is your salary grade level/ HATISS/UASS/CONTISS…….
9. What is your highest qualification? .
   BSc ☐ P.G.D. ☐ MSc ☐ Ph. D ☐

10. Ownership of personal information resources:

Please indicate the number of personal information resources owned by you:

Information Resources	Number Owned
Books	
Journals	
Reports	
Conference proceedings	
Grey literature	
CD-ROM Databases	
Internet Connectivity	Yes/No

11. Level of satisfaction of Information need of scientists by personal information resources owned

VS=Very satisfactory S=Satisfactory U=Unsatisfactory

VU=Very unsatisfactory

Information Resources	VS	S	U	VU
Books				
Journals				
Reports				
Conference Proceedings				
Other grey literature				
CD-ROM Databases				
Internet Connectivity				

SECTION B: AVAILABILITY/FUNCTIONALITY OF LIBRARY RESOURCES

The operational measurement for this section of the questionnaire ranges as follows:

AFA=Available and functional/Adequate

ANFA=Available but not functional/Adequate NA=Not available

12. Please assess the availability/functionality/adequacy of the following library resources in your institution's library:

		AFA	ANFA	NA
a.	CD-Rom facilities			
b.	Electronic databases(ASFA, AGORA, FAO Fisheries Database, DOAJ, INASP etc)			
c.	Internet facilities			
d.	Seating facilities			
e.	Library staff			
f.	Audio-visual resources (Cameras, audio/video cassettes/recorders, projectors, computers/printers, CD-ROM etc.)			
g.	Shelves			
h.	Bindery facilities			
i.	Computers/printers			

13. Do you experience any difficulty in using any of the library's resources?

a. Yes ☐ b. No ☐

14. If yes, please briefly state the difficulty(ies)

SECTION C: AVAILABILITY OF INFORMATION SERVICES IN THE LIBRARY

The operational measurement for this section of the questionnaire ranges as follows:

A=Available, NA=Not available

15. Please assess the provision of information services in your institution's library using the operational measurement scale shown above for the table of services as follows

		A	NA
a.	Publication of accessions list of new materials		
b.	Publication of tables of content of new journals		
c.	Publication of library bulletin		
d.	Compilation of bibliographies		
e.	Display of newly received documents before loan		
f.	Indexing and abstracting		
g.	Translation of foreign language periodicals		
h.	Printing of library guide/orientation manual		
i.	Provision of shelve guide		
j.	User education		
k.	Document delivery		
l.	Current awareness/SDI		
m.	Lending service		
n.	Reservation service		
o.	Inter-library loans		

SECTION D: ADEQUACY OF LIBRARY SERVICES

The operational measurement for this section of the questionnaire ranges as follows:

VA=Very adequate A=Adequate

I=Inadequate VI=Very inadequate

What is the level of adequacy of the following aspects of the library services?

		VA	A	I	VI
a.	Duration of book loan				
b.	Reference services				
c.	Photocopying services				
d.	Selective dissemination of information (SDI)				
e.	Answering users' queries				
f.	No of hours library is open to users daily				
g.	Inter-library loan services				
h.	Library orientation				
i.	Weekend library services				
j.	Provision of reading space				
k.	Provision of current journals				

SECTION E: LIBRARY USE

16. How frequently do you use your institution's library approximately?

daily ☐ 2-3 times in a week ☐ weekly ☐ 2 – 3 times in a month ☐

Other(Please specify)……

17. For what purpose do you visit the library most?

Leisure reading ☐ general reading ☐

Research-related information need ☐

Internet browsing/electronic database search ☐

18. What information materials do you find most useful in the library?

Journals ☐ books ☐ electronic databases ☐

reports ☐ government publications ☐ conference proceedings ☐

grey literature ☐

19. Is your institution's library's stock of these materials adequate?

A	Journals	Yes	No
b.	Books		
c.	Electronic databases		
d.	Reports		
e.	Government publications		
f.	grey literature		

20. Please tick five out of the following list of journals that you find most useful for your fisheries research related needs.

a. Journal of fish Biology ☐

b. Journal of Aquatic Sciences ☐

c. Hydrobiologia ☐

d. Aquaculture ☐

e. Freshwater Biology ☐

f. Journal of Fisheries Research Board of Canada ☐

g. The progressive Fish culturist ☐

h. Water Research ☐

i. Transactions of American Fisheries Society ☐

j. Comparative Biochemistry and Physiology ☐

List adapted from Ibeun and Madu (2002).

21. Please tick the ones that are available in your institution's library or the ones which your library makes accessible to you.

a. Journal of fish Biology ☐
b. Journal of Aquatic Sciences ☐
c. Hydrobiologia ☐
d. Aquaculture ☐
e. Freshwater Biology ☐
f. Journal of Fisheries Research Board of Canada ☐
g. The progressive Fish culturists ☐
h. Water Research ☐
i. Transactions of American Fisheries Society ☐
j. Comparative Biochemistry and Physiology ☐

Access to Electronic Information Resources:

22. Please indicate your level of access to electronic information resources:

Electronic Resources	Level of access			
	Unlimited access	Accessible whenever needed	Rarely accessible	Not accessible
Internet connectivity				
CD-ROM Databases				

APPENDIX II

FISHERIES SCIENTISTS QUESTIONNAIRE ON PUBLICATION OUTPUT (FSQPO)

Department of Library, Archival and Information Studies,
University of Ibadan, Ibadan.
20th August, 2009.

Dear Respondent,

RESEARCH QUESTIONNAIRE FOR FISHERIES SCIENTISTS

This questionnaire is aimed at collecting information for a doctoral research on the resources, services and use of fisheries libraries by fisheries scientists in Nigeria.

Kindly respond to the questions as honestly as possible as your response will be treated with utmost confidentiality. All responses will be used purely for academic purposes for a successful completion of the study.

Thank you for your co-operation.

Ijeoma Doris Madu
Ph.D Research Student

1. How many publications have you?.....
2. How many publications have you made in the last three years?……..

   2005 ---------- 2006 ---------- 2007 ----------
3. How many of them were published in international journals, etc .....
4. As a result of your use of the various information resources and services in the library, please indicate the number of the various academic activities, as listed, which you have undertaken in the last three years.

		2007	2008	2009
a.	Examination/test			
b.	Research report submitted			
c.	Book(s) written			
d.	Journal articles published			
e.	Proposals			
f.	Dissertation/thesis			

RECOMMENDATIONS

What general recommendations would you proffer for the improvement of library services for a higher productivity of fisheries scientists?

……
…….....
.....

Please kindly attach the aspect of your curriculum vitae (CV) showing your publications.

Thank you very much for your co-operation.

APPENDIX III

LIBRARIANS' QUESTIONNAIRE ON AVAILABILITY OF LIBRARY RESOURCES (LQALR)

Department of Library, Archival and Information Studies,
University of Ibadan, Ibadan.
20th August, 2009.

Dear Respondent,

RESEARCH QUESTIONNAIRE FOR HEAD LIBRARIANS

This questionnaire is aimed at collecting data for a doctoral research on the resources, services and use of fisheries libraries in Nigeria.

Kindly respond to the questions as this will enable the researcher to successfully complete the study. The responses and information provided will be used purely for academic purposes and will be handled with utmost confidentiality.

Thank you for your co-operation.

Ijeoma Doris Madu
Ph.D research student

SECTION A: PERSONAL DATA

1. Name of institution----------

   Name of library----------

   Year established----------

2. What is your present designation?

   College librarian ☐ Institute librarian ☐ University Librarian ☐

   Head of Departmental Library ☐

3. What is your highest professional qualification?----------

   BLS ☐ MLS ☐ PhD ☐

4. Please indicate any additional qualification obtained to facilitate your professional services in the fisheries research environment

   BSC ☐ MSC ☐ PhD ☐

SECTION B: AVAILABILITY OF LIBRARY RESOURCES

Please indicate the number of book resources stocked by your library:

Books---------- Journals----------Other periodicals---------- Conference proceedings----------Reports---------- Other grey literature----------

Please indicate the availability and functionality of these resources in your library:

AVF=Available and functional; AVNF=Available but not functional;
NA= Not available

		AVF	AVNF	NA
a.	Internet connectivity			
b.	Computer servers			
c.	Work stations (personal computers)			
d.	Laptops			
e.	Printers			
f.	Facsimile			
g.	Copiers			
h.	Intercom			
i.	Electronic databases			
j.	CD-ROM resources			

SECTION C: ADEQUACY OF LIBRARY RESOURCES

Please indicate the adequacy of the following resources in your library using the scale indicated

VA=very adequate A=Adequate NA=Not adequate

	Library Resources	VA	A	NA
a.	Internet connectivity			
b.	Computer servers			
c.	Work stations (personal computers)			
d.	Laptops			
e.	Printers			
f.	Facsimile			
g.	Copiers			
h.	Intercom			
i.	Electronic databases			
j.	CD-ROM resources			
k.	Library staff			

APPENDIX IV

LIBRARIANS' QUESTIONNAIRE ON ADEQUACY OF LIBRARY SERVICES (LQALS)

Department of Library, Archival and Information Studies,
University of Ibadan, Ibadan.
20th August, 2009.

Dear Respondent,

RESEARCH QUESTIONNAIRE FOR HEAD LIBRARIANS

This questionnaire is aimed at collecting data for a doctoral research on the resources, services and use of fisheries libraries in Nigeria.

Kindly respond to the questions as this will enable the researcher to successfully complete the study. The responses and information provided will be used purely for academic purposes and will be handled with utmost confidentiality.

Thank you for your co-operation.

Ijeoma Doris Madu
Ph.D research student

The operational measurement scale to be used for this section ranges as follows:

NA – Not available ANA – Available but not adequate A – Adequate

Please assess the level of availability and adequacy of the following services in your library:

		VA	A	I	VI
a.	Duration of book loan				
b.	Reference services				
c.	Photocopying services				
d.	Internet services				
e.	Selective dissemination of information (SDI) (Personalized information services)				
f.	User's education				
g.	Library orientation				
h.	Opening hours/days				
i.	Weekend library services				
j.	CD-ROM search				
k.	Library orientation services/publication of user's manual				
l.	Compilation of bibliographies				
m.	Publication of library bulletin				
n.	Publication of tables of content of new journals				
o.	Publication of accessions list of new materials				
p.	Display of new arrivals				
q.	Indexing and abstracting				
r.	Translation of foreign language periodicals				

APPENDIX V

LBRARIANS' QUESTIONNARE ON USE OF LIBRARY RESOURCES (LQULR)

Department of Library, Archival and Information Studies,
University of Ibadan,
Ibadan.
20th August, 2009.

Dear Respondent,

RESEARCH QUESTIONNAIRE FOR HEAD LIBRARIANS

This questionnaire is aimed at collecting data for a doctoral research on the resources, services and use of fisheries libraries in Nigeria.

Kindly respond to the questions as this will enable the researcher to successfully complete the study. The responses and information provided will be used purely for academic purposes and will be handled with utmost confidentiality.

Thank you for your co-operation.

Ijeoma Doris Madu
Ph.D research student

1. Does your library keep library use statistics?

   Yes ☐ No ☐

2. If yes, how many fisheries scientists, on the average, use the library daily?

   0 – 10 ☐ 11 – 20 ☐ 21 – 30 ☐ 31 - 40 ☐ 41 – 50 ☐

3. What information materials are utilized most by the fisheries scientists in the library?

   Books ☐ Journals ☐ Electronic databases ☐

   Research/technical reports ☐ Conference proceedings ☐

4. What, in your judgement, are the hindrances to use of the lowly utilized resources?----------

   ---

APPENDIX VI

LIBRARIANS' QUESTIONNARE ON USE OF LIBRARY SERVICES (LQULS)

Department of Library, Archival and Information Studies,
University of Ibadan,
Ibadan.
20th August, 2009.

Dear Respondent,

RESEARCH QUESTIONNAIRE FOR HEAD LIBRARIANS

This questionnaire is aimed at collecting data for a doctoral research on the resources, services and use of fisheries libraries in Nigeria.

Kindly respond to the questions as this will enable the researcher to successfully complete the study. The responses and information provided will be used purely for academic purposes and will be handled with utmost confidentiality.

Thank you for your co-operation.

Ijeoma Doris Madu
Ph.D Research Student

1. What information services are utilized most by the fisheries scientists in the library? Books Journals Electronic databases research/technical reports ☐ Conference proceedings ☐

2. What, in your judgement, are the hindrances to use of the lowly utilized services?----------
---

RECOMMENDATION

Please proffer your suggestion(s)/comments/recommendation for the improvement of library services for fisheries scientists in your institution.

Thank you very much for your co-operation.

APPENDIX VII

LIST OF NIGERIAN JOURNALS COVERED BY ASFA

1.	Journal of Aquatic Sciences
2.	Global Journal of Environmental Sciences
3.	Global Journal of Pure and Applied Sciences
4.	Journal of Applied Sciences and Environmental Management
5.	Bioscience Research Communication
6.	Journal of Arid Zone Fisheries
7.	Journal of Fisheries Technology
8.	Journal of Sustainable Tropical Agricultural Research
9.	Journal of Tropical Bioscience
10.	Tropical Freshwater Biology
11.	Nigerian Journal of Fisheries
	Grey Literature
12.	NIFFR Annual Report
13.	NIOMR Annual Report
14.	NIFFR Newsletter
15.	NIOMR Newsletter
16.	NIFFR Technical Report
17.	NIOMR Technical Report
18.	NIFFR Occasional paper
19.	NIOMR Occasional paper
20.	Fish Network (FISON Newsletter)
21.	FISON Proceedings
22.	Technical Report of Nigerian-German Kainji Lake Fisheries Promotion Project