

TECHNIQUES
FOR
WRITING AND PRESENTATION
OF
THESIS/DISSERTATION:

*A Companion Guide for Postgraduate
Students in Nigerian University System*



Umar Ibrahim

**Techniques for Writing and Presentation of
Thesis/Dissertation: A Companion Guide for
Postgraduate Students in Nigerian
University System**

Umar Ibrahim, PhD

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DEDICATION

This Book is humbly dedicated to all my Teachers that taught me any type of knowledge, especially my lecturers for research methods and statistics, and to all my students that I taught, especially the same course.

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FORWORD

The numbers of students that register for postgraduate programmes but could not complete are so many. Data indicate that they withdraw not because of the course work, but mainly because of their inability to complete their theses and dissertations. This signpost that many postgraduates still lack skills, techniques and art of writing and presenting theses/dissertations. This is why this book becomes very relevant and timely.

As a guide, the book provides essential skills, strategies and techniques of writing and presenting theses/dissertations. The areas covered are quite adequate and very much simplified. Apart from the author possessing the required qualification and experience in research methods and other related areas, being also one time Assistant Dean (Postgraduate) in the Faculty of Education, Ahmadu Bello University, Zaria had made him presented and depended theses/dissertations of postgraduates of the faculty in the Postgraduate School. As a librarian and also as **“the custodian of intellectual heritage”**, i.e. the library, the author enumerated different search strategies in sourcing and searching both conventional and virtual libraries, as well as providing stages of theses/dissertations examination or defence, including the role of supervisory committee and strategies for successful *Viva Voce*. I therefore strongly recommend this book to all those aspiring for higher degrees and other potential researchers.

Dr. Mamman Musa
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February, 2013

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All thanks and praises are due to Allah (SWT), Al- Alim. Peace and blessings of Allah be upon His last prophet Muhammad (SAW), his household and the rightly guided companions.

I will like to first and foremost pay due homage to my lecturers that taught me research methods and statistics in the persons of late Dr Umar Idris Jahum, Dr Mamman Musa and Prof M. J. Shuaibu. I will continue to appreciate and thank you because you have been very wonderful teachers.

I am highly indebted to my wives: Hajia Shema'u and Hajia Maryam and my Children: Usman, Abdullahi (Bappa), Ibrahim (Khalifa), Aishat, Rukkaiyat, Maryam (Sayyada) Muhammad (Sidi), Fatima, Ibrahim (Amir) and Ahmad for their untiring love and support. My siblings too have been wonderful, their continued love, cooperation and support are inestimable.

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To my colleagues in the Department of Library & Information Science, A.B.U. Zaria and Kaduna State University, especially the former Vice Chancellor, Prof E. M. Abdurraham, the incumbent Vice Chancellor, Prof W. B. Qurix, Alh Sani Abubakar, Registrar, Alh Rilwanu Abdussalam, FNLA Mr. Joshua S. Mogoi, Mr. Sunday Yarima, Mrs. Ester Gani, Mal Usman Adamu, Mal Lawal Bature and many others too numerous to mention I remain very grateful.

PREFACE

So many books have been written on research methods. So, one may wonder why this one again? It is a fact that despite the availability of these books and students made to take courses in research methodology and statistics, students still experience difficulty and anxiety when it comes to writing research proposal and research report.

This book is therefore not a duplication but an attempt to explain in simple language what those books have written. Using my experience of teaching the course to Postgraduate students over a long period of time and my recognition of those areas students find difficulty in comprehending research process made me to venture into producing this book.

Apart from my resolve to simplify the ways students undertake research work as a motivation, the enthusiasm and commendation that poured in after presenting two seminar papers titled: *“Writing and Presentation of Thesis in Postgraduate Education in Nigerian University System: A Companion Guide”* and *“Developing Search Strategies for effective research output among staff and students of Kaduna State University: A Librarian contribution”* from both staff and students and subsequent encouragement to convert those seminar papers into book form also contributed to publishing this book.

The book is divided into five chapters. Chapter one introduces research as the bedrock of development and the place of universities in promoting it. It also provides background information on Nigerian University system and postgraduate programme. Chapter two discusses the concept of research highlighting the process of scientific method of research and stressing research process models. Using examples, the chapter demonstrates how to design the research process, identify area

of specialization/interest and research problem. It also shows how to construct research title/topic and using the title/topic to design framework/outline as well as concepts mapping. Sourcing and searching is presented in chapter three, which enumerates different search strategies to be adopted to retrieve information from both conventional and e- libraries.

Getting to real work otherwise known as writing out the research is presented in chapter four. Here, the chapter discusses in detail what the researcher is supposed to write in chapters one- five of the research work. Chapter five provides other essential information the researcher needs to include outside what he/she provided in chapter one- five. The final chapter – chapter six discusses the stages of Dissertation/Thesis Examination or Defence (*Viva Voce*), including the role of supervisory committee and what is expected of the researcher. Using Levine and other scholars’ suggestions, the chapter provided strategies for successful Viva and concluded with discussion on attributes of good Dissertation/Thesis.

Though written specifically for Postgraduate students in Nigerian University system, the author believes that the book will be very useful to other students pursuing one programme or the other. It will equally assist researchers and those writing seminar/conference and journal articles.

Prof Umar Ibrahim, CLN, FNLA

January, 2013

1.0 INTRODUCTION

The University, metaphorically referred to as an "Ivory tower" is the highest educational institution which runs undergraduate and postgraduate programmes that confers bachelor, master and doctorate degrees. Apart from being universal and apex of all the educational system, it also represents the intellectual height of scholars. This is why Oloyede (2009) described university as an epitome of scholarship, the pinnacle of research and the cornerstone of development. It is a place where civilizations are shaped, where youth are prepared and the future of a country is determined. Therefore without a university, the universe is in peril.

University education has three cardinal points: teaching, learning and research. The teaching and research functions of universities have an important role to play in national development, particularly in the development of high level manpower. Furthermore, universities are one of the best means for developing national consciousness.

Research is indeed regarded as the bedrock of development. And because since inception, most researches are carried out in universities or centers and institutes, which are either residing in the universities or affiliated to them, makes them as focal points for national development. Researches and breakthrough are recorded by students either at undergraduate or postgraduate levels. Additionally and more importantly, university staff, as central part of their job conducts researches, as individuals and as groups. Researches may also be carried at undergraduate and postgraduate levels as term papers and course requirements. In addition to all these, university may designate certain centers and institutes, with the sole mandate of carrying out researches in particular areas, such as agriculture, health, energy, etc.

However, despite the fact that students not only studied research methodology at the undergraduate level and produce research project, and do same at the postgraduate level, writing and presentation of thesis/dissertation still remain a herculean task to most students. Students normally express this difficulty by wishing to even repeat the course work instead of writing the thesis/dissertation. In most cases spending no less than double the period they spend in course work for thesis/dissertation writing.

This book therefore seeks to enumerate and discuss those techniques students need to master dearly in order to effectively write and present thesis and dissertation without tears and sweat. Many books have been written by eminent scholars in the area of research; some from general perspective while others from discipline or subject perspective. This book will not therefore dwell so much on definition and technicalities, rather, it will concentrate on explanations and simplification of concepts, procedures, processes, etc. of research that students find difficulty in comprehending and applying.

1.1 Nigerian University System

In Nigeria, University education could be traced to the Elliot Commission of 1947 and Eric Ashby Commission. The reports of these commissions resulted in the establishment of the first generation universities, notable among them the University of Ibadan and Ahmadu Bello University, Zaria. The Nigeria University system has expanded rapidly in terms of the number of institutions established, new programmes, and the number of students admitted. According to Okojie, Oloyede and Obanya (2010) there are no fewer than 104 universities made up of 27 Federal, 36 state and 40 private universities in the country. The purpose of university education as contained in the Nigeria Education Act is to, among others: develop intellectual capacities of individuals to understand and appreciate their environment; promote the acquisition of both

physical and intellectual skills to enable individuals to develop into useful members of the community; and promote and encourage scholarship and research.

The National Universities Commission was established as a regulatory agency for university education in Nigeria. As a coordinating body, the commission ensures orderly development of a well-coordinated and productive university system that guarantees quality and relevant education for national development. Okojie (2010) revealed that the quality assurance function of the National Universities Commission consists basically of the setting of Minimum Academic Standards (MAS) for all programmes taught in Nigerian universities and accreditation of such programmes to assure the public of the quality of Nigerian University education.

1.2 Postgraduate Education in Nigerian University System

Postgraduate, synonymous to graduate education is the type of higher degree that is pursued for which a Bachelor's degree or its equivalent is required. The organization and structure of postgraduate education varies in different countries, and also in different institutions within countries.

Generally there are two pathways to postgraduate education in Nigeria as in most other countries of the world. These pathways are postgraduate program by course work or by research. The course pathway involves students registering and passing some designated courses before embarking on the research work. While the pathway of research work means students are choosing a topic and immediately starting thesis writing without undertaking course work.

1.3 Type of Postgraduate Programs in Nigerian University System

In most Nigerian University System, the hierarchy of post-graduate degrees is as follows:

- PhD or Doctorate Program. This is regarded as terminal degree in all the Nigerian Universities. Before a candidate is admitted into this program, the candidate must have obtained first and second degrees in the same or related fields. It is called doctor of philosophy because at this level, the candidate is expected to contribute to knowledge by discovering or inventing new things, or by theorizing or debunking existing ones, or even designing and proposing new models
- Master's Program. The master's program requires that the candidate has first degree in that field or related areas. The master's program is sometimes placed in a further hierarchy, starting with degrees such as the Master of Arts and Master of Science, then Master of Philosophy. Master's degrees may also be taught or by research: taught Master's degree include the MSc and MA degrees which last for a minimum of two years. The Master's by research degrees also last for a minimum of two years, and the MPhil (Master of Philosophy) degree is also two years, and is often granted to failed doctorate students
- Other types of Postgraduate Program available in Nigerian University System include the Professional Postgraduate Program and Postgraduate Diploma. These are not normally academics. Therefore, their duration is shorter and in most cases, their content less. Graduate of these programs cannot in most universities in Nigeria be admitted for doctorate program.

Requirements for the successful completion of a taught master's program are that the student passes all the required core and elective courses, which normally last for one-year plus a thesis, which will also take another year. Requirements for research-based programs vary among universities. Generally, however, a student is not required to take taught courses as part of their candidacy.

Upon completion of at least two years' research and course work as a postgraduate student, a candidate must demonstrate truthful and original contributions to his or her specific field of knowledge within a frame of academic excellence. The Master and Doctoral candidate's work should be presented in a dissertation or thesis prepared under the control of a lecturer or supervisor, and reviewed by a postgraduate committee. This Committee should be composed of examiners; at least one of them should be external to the institution.

A dissertation or thesis is therefore, according to Wikipedia (2010) the result of research findings submitted in support of candidature for a degree or professional qualification. It declares what the candidate believes and what she/he intends to prove. A good thesis/dissertation statement makes the difference between a thoughtful research project and a simple retelling of facts.

From the above discussion, it can be seen clearly that research is very important. It is because of its importance that research methodology as course is taught at both undergraduate and postgraduate levels. Even for those programs that are by research work, students are required to take this course.

2.0 THE CONCEPT OF RESEARCH

The term research is derived from the word search, which is a verb meaning to examine closely and carefully, to test and try, or to probe. It also means checking and double checking; suggesting thoroughness. Research is therefore a structured enquiry that utilizes acceptable scientific methodology to solve problems and create new knowledge that is generally applicable.

More explicitly, research can be described as studious inquiry or systematic investigation of some phenomenon or series of phenomena by experimental method in order to discover facts, to establish or revise a theory, or to develop a plan of action based on the facts discovered. No wonder Booth, Colomb and Williams (2008) describe researches as looping back and forth, moving forward a step or two before going back in order to move ahead again, changing direction all the while anticipating stages not yet began.

Research involves two process; the scientific method, which is a process of separating truth from error and facts from judgments, of compiling and selecting evidence to support a credible conclusion, and art method, which has to do with the process of organizing the results on paper so that they will instruct and even intrigue a reader. In a first-rate research, according to Ibrahim (2010) the “two cultures” meet. Therefore, any research work should be the product of both critical thinking and creative writing. A research should reflect the enthusiasm of an alert mind, not the methodological digging of a reluctant mole.

2.1 The Process of Scientific Method

Walonick (1993) noted that until the sixteenth century, human inquiry was primarily based on introspection, turning inward and using logic to seek the truth, which endured for a

millennium and was a well-established conceptual framework for understanding the world. However, a profound change occurred during the sixteenth and seventeenth centuries with Copernicus, Kepler, Galileo, Descartes, Bacon, Newton, and Locke presenting a new method that relies on measurement and quantification. With this, Mathematics replaced introspection as the key to supreme truths. This development gave birth to *Scientific method of research*, where objectivity became a critical component of the new scientific method. Therefore, experimentation and deduction became the tools of the scholar. For two hundred years, the new paradigm slowly evolved to become part of the reality framework of researchers

2.2 Characteristics of Research

To qualify as research, research must have certain characteristics, which include the following:

- ☛ Must be undertaken within a framework of a set of philosophies (approaches);
- ☛ uses procedures, methods and techniques that have been tested for their validity and reliability;
- ☛ designed to be unbiased and objective

2.3 Types of Research

Many scholars have adopted various ways of classifying research. However these different ways could be grouped into three perspectives, which are as follows:

- ❖ *application* of research study
- ❖ *objectives in undertaking* the research
- ❖ *inquiry mode* employed

Classification by Application of Research Study

From the point of view of application, there are two broad categories of research:

Pure research and applied research. Pure research involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not

have practical application at the present time or in the future. The knowledge produced through pure research is sought in order to add to the existing body of research methods. Applied research is done to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon. It can be exploratory, but is usually descriptive. It is almost always done on the basis of basic research. Applied research can be carried out by academic or industrial institutions. Often, an academic institution such as a university will have a specific applied research program funded by an industrial partner interested in that program.

Classification by Objectives in Undertaking Research

From the viewpoint of objectives, a research can be classified as descriptive, correlation, explanatory, and exploratory. Descriptive research attempts to describe systematically a situation, problem, phenomenon, service or programme, or provides information about, say, living condition of a community, or describes attitudes towards an issue. On the other hand correlational research attempts to discover or establish the existence of a relationship/interdependence between two or more aspects of a situation. While, explanatory research attempts to clarify why and how there is a relationship between two or more aspects of a situation or phenomenon. Exploratory research is undertaken to explore an area where little is known or to investigate the possibilities of undertaking a particular research study (feasibility study/pilot study). In practice most studies are a combination of the first three categories.

Classification by Inquiry Mode:

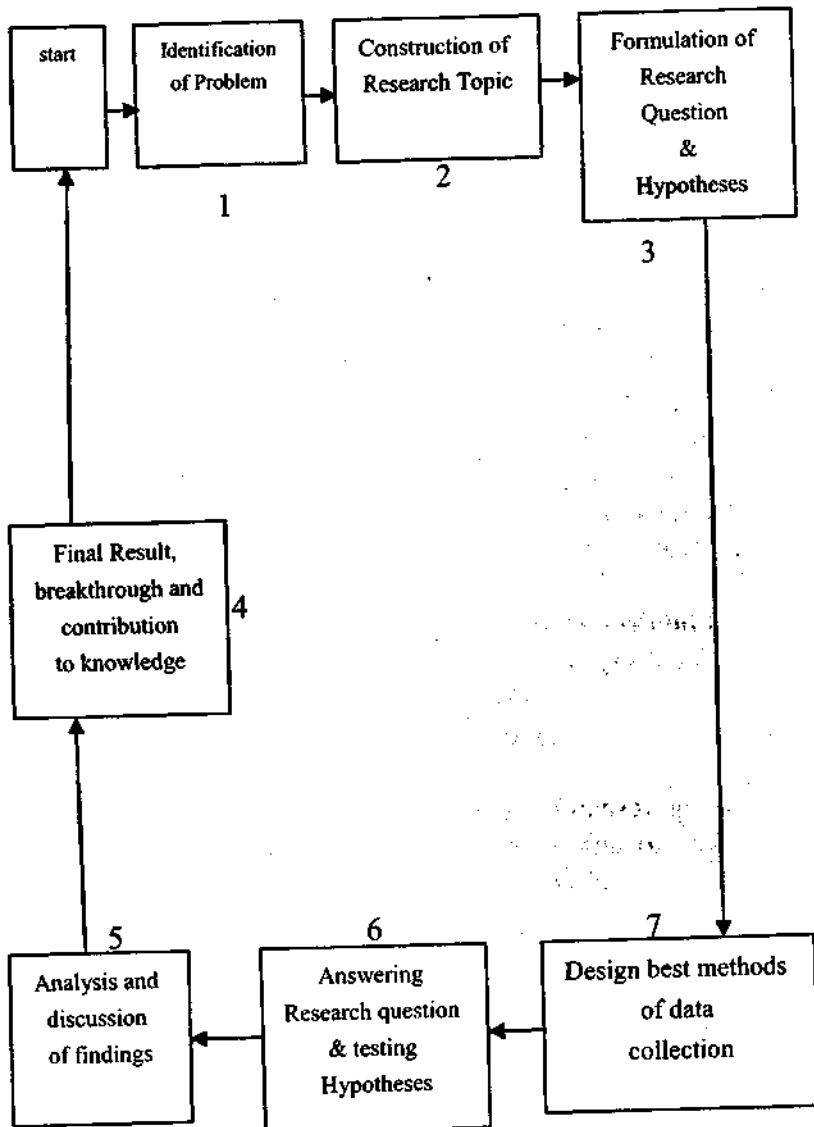
Inquiry mode tells the process adopted to find answer to research questions – the two approaches are: Structured approach and unstructured approach. The structured approach to inquiry is usually classified as quantitative research. Here everything that forms the research process- objectives, design,

sample and the questions planned to ask respondents- is predetermined. It is more appropriate to determine the extent of a problem, issue or phenomenon by quantifying the variation. e.g. how many people have a particular perception or how many people hold a particular attitude? On the other hand the unstructured approach to inquiry is usually classified as qualitative research. This approach allows flexibility in all aspects of the research process. It is more appropriate to explore the nature of a problem, issue or phenomenon without quantifying it. Main objective is to describe the variation in a phenomenon, situation or attitude. e.g, description of an observed situation, the historical enumeration of events, an account of different opinions different people have about an issue, description of working condition in a particular organization. Both approaches have their place in research and have their strengths and weaknesses. Many studies combine both qualitative and quantitative approaches.

2.4 The Process of Scientific Research

There are many research models proposed by scholars for research process. For instance, Preddy (2002) proposed a recursive questioning cycle in inquiry research. The model consists of four steps in a cycle. First, the researcher starts by formulating research questions, then determine best method and source to answer questions. The third step is where the researcher answers the research questions adequately. According to him the answers found may raise new questions, which will warrant formulating another research questions and conducting new research; this represents the fourth step and completes the cycle. Based on analysis made on other models of research process, a comprehensive model incorporating most of the steps suggested by other models is presented below.

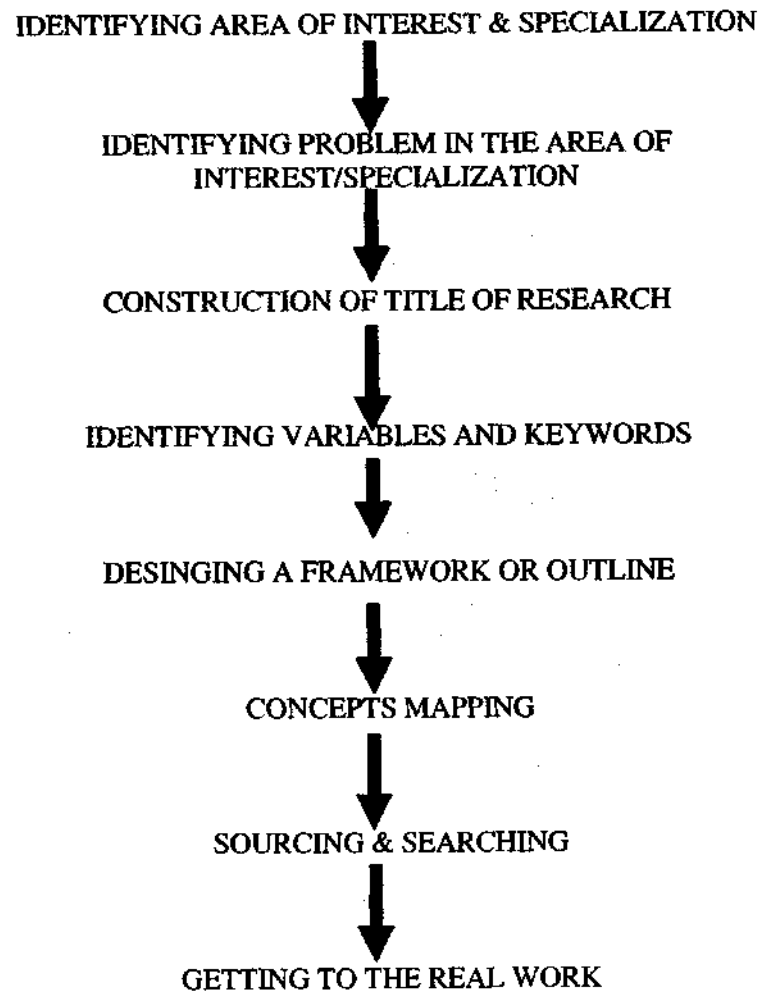
1: Research Process Model



The above diagram consists of seven steps. The starting point of every research is the identification of research problem. This depends largely on area of specialization and/or interest of the researcher. A research topic or title is coined from the identified research problem, the topic or title should contain all the major measurable variables. Since research are undertaken to find answers to specific problems, formulating answerable research questions and testable hypotheses become very important. To successfully achieve this, best methods of data collection need to be designed. Analysis of data collected help in answering and testing the research questions and hypotheses rose in the research work. Similarly, discussing the findings of the research work will clearly show whether breakthrough have really been achieved.

Figure 2 below further provides detail explanations on how steps 1 and 2 of the above research process model can be carried out. After identifying the research problem, the researcher should then move ahead to construct the title or topic of the study, which should contain concepts/keywords and measurable variables. Framework or outline should be designed from the constructed research title or topic. The researcher should map out concepts for each variable that is contained in the title. Literature should be sought for every concepts mapped out.

Figure 2: Stages of Research Process



2.5 Identifying Area of Specialization and Interest

One of the biggest obstacles of students, after completing and passing course work is to find a thesis/dissertation topic. The requirement is always that students identify and pick research topic of interest from their area of specialization. Successful identification and selection of research topic of interest requires building an inventory of area of interest over a period that gives direction to the research. There is the need for a researcher to find topic among his interest and to narrow it to a manageable scope, then to question it to find the makings of a problem that can guide the research. A good research topic should be intellectually challenging and raise interesting questions that answers could be found. To choose topic from the inventory of area of specialization/interest created, the researcher need to review the list to find area that look promising and raises questions that research can help answer. Table 1.1 below shows how an area of specialization/interest can be developed.

Table 1.1: CREATING INVENTORY OF AREA OF SPECIALIZATION/INTEREST

S/N	Specialization/Interest	COVERAGE							
		History	Trends	Technology	Controversies	Usage	Users	Evaluation/Assessment	Others
1	Libraries-Academic, special, school, public,								
2	Information Centers-Private/Public Organizations & Institutions								
3	Information Science								
4	Archives/Record Management								
5	Publishing/Book Trade								

In creating inventory of area of interest/specialization, the researcher should be inclusive with his/her thinking. Ideas should not be eliminated too quickly. Ideas should be built and see how many different research projects can be identified. The researcher should give himself or herself the luxury of being expansive in his/her thinking at this stage and should try and be creative. All ideas thought of should be written down. This will allow the researcher to revisit an idea later on, or to modify and change an idea. If ideas are not written down they tend to be in a continual state of change and researcher will probably have the feeling that he/she is not going anywhere. What a great feeling it is to be able to sit down and scan the many ideas you have been thinking about, if they're written down.

2.6 Identifying Problem in the area of specialization/interest

After identifying area of specialization/interest, the next very important activity to do is to identify a research problem from the identified area of specialization/interest. This can be done through the following:

- Personal observation of past and current events
- Past projects, theses and dissertations
- Suggestion for further study in past projects, theses and dissertations
- Journal articles, seminar, workshop and conference presentations
- Indexes and Abstract
- Dissertation Abstracts
- Bibliographies
- Surfing the Internet
- Online and offline Databases

2.7 Considerations in Selecting a Research Problem

The following are worth considering before adopting a research problem. The suggestion ensures that the chosen research problem remains manageable and researcher's motivation sustained:-

- **Interest:** a research endeavour is usually time consuming, and involves hard work and possibly unforeseen problems. The researcher should select topic of great interest to sustain the required motivation.
- **Magnitude:** It is extremely important to select a topic that can be managed within the time and resources at disposal. Narrow the topic down to something manageable, specific and clear.
- **Measurement of concepts:** The researcher should ensure clarity of indicators and measurement of concepts.
- **Level of expertise:** The researcher should have adequate level of expertise for the task being proposed since the researcher is to do the work himself.
- **Relevance:** The researcher should ensure the study adds to the existing body of knowledge, bridges current gaps and is useful in policy formulation.
- **Availability of data:** Before finalizing the topic, the researcher should make sure that data are available in the chosen area.
- **Ethical issues:** How ethical issues can affect the study of population and how ethical problems can be overcome should be thoroughly examined at the problem formulating stage.

2.8 Construction of Research Title or Topic

After identifying research problem in one's area of specialization that satisfied the above conditions, the researcher is expected to construct a title or topic. A title or topic of research is a summary statement that consist of concepts/keywords and variables which clearly and unambiguously expresses the research problem and direction. Therefore the research topic should not be too lengthy. The researcher should know and be ready to defend every word and phrase contained in the title or topic of research, even if they are definite articles. Consequently, all words in the

title as noted by Day & Gastel (2006) should be chosen with great care, and their association with one another must be carefully managed. When composing a title, the researcher should build it with words that characterize his/her entire research work remember that title will be read by thousand and perhaps only few will get to reading the whole or even parts of the work.

A variable as contained in a title is an image, perception or concept that can be measured – hence capable of taking on different values. While concepts are mental images or perceptions and therefore their meaning varies markedly from individual to individual. The difference between concepts and variables is that a concept cannot be measured whereas a variable can be subjected to measurement by crude/refined or subjective/objective units of measurement.

It is therefore important for the concept to be converted into variables. In a research study it is significant that the concepts used be operationalised in measurable terms so that the extent of variations in respondents' understanding is reduced if not eliminated. Techniques about how to operationalise concepts, and knowledge about variables, play an important role in reducing this variability. Their knowledge therefore, is important in 'fine tuning' your research problem.

A good research title or topic should have the following attributes:

- ☞ One that fits into the context of your area of specialization or interest
- ☞ Poses intellectual challenges
- ☞ Raises questions
- ☞ Researcher being conversant with
- ☞ Has and clearly identifiable Independent and Dependent variables

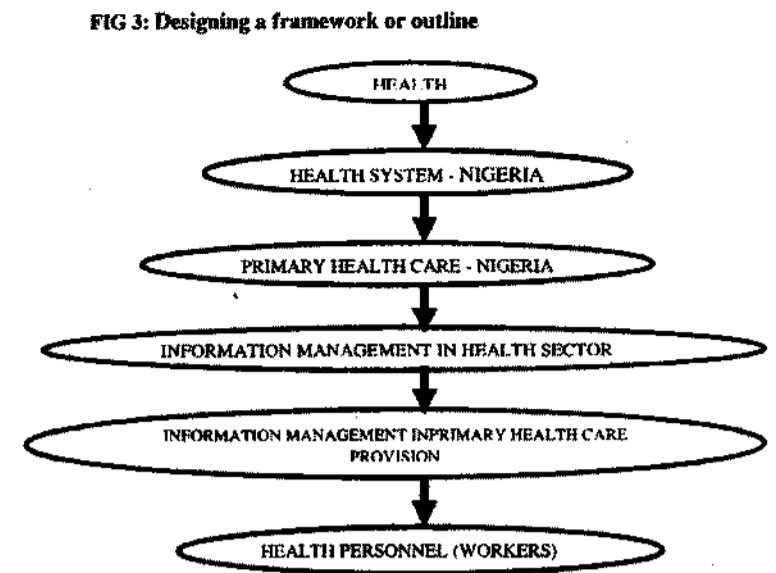
2.9 How to find a good research topic

- Start by listing as many interest as you can that you will like to explore
- Ask about the history of your topic
- Ask about its structure and composition
- Ask speculative questions
- Turn positive questions into negative
- Answer so what?
- Conduct a preliminary study on the research topic/area to conduct the research

2.10 Designing a Framework or Outline for the Study

A framework or outline is like a skeleton of the research work. It shows the flow chart of all the concepts and variables of the research in a systematic order which the researcher intends to follow. Framework or outline should be designed in such a way that the concepts and variables would flow either from general to specific or vice versa. Figure 3 below illustrates an outline using *Awareness, Access and Utilization of Information for Primary Health Care Development in Nigeria* as an example of a title. The figure shows concepts in a flow from general to specific; from health, which is too broad to health system, a narrower term, and specifically to primary health care, a much narrower.

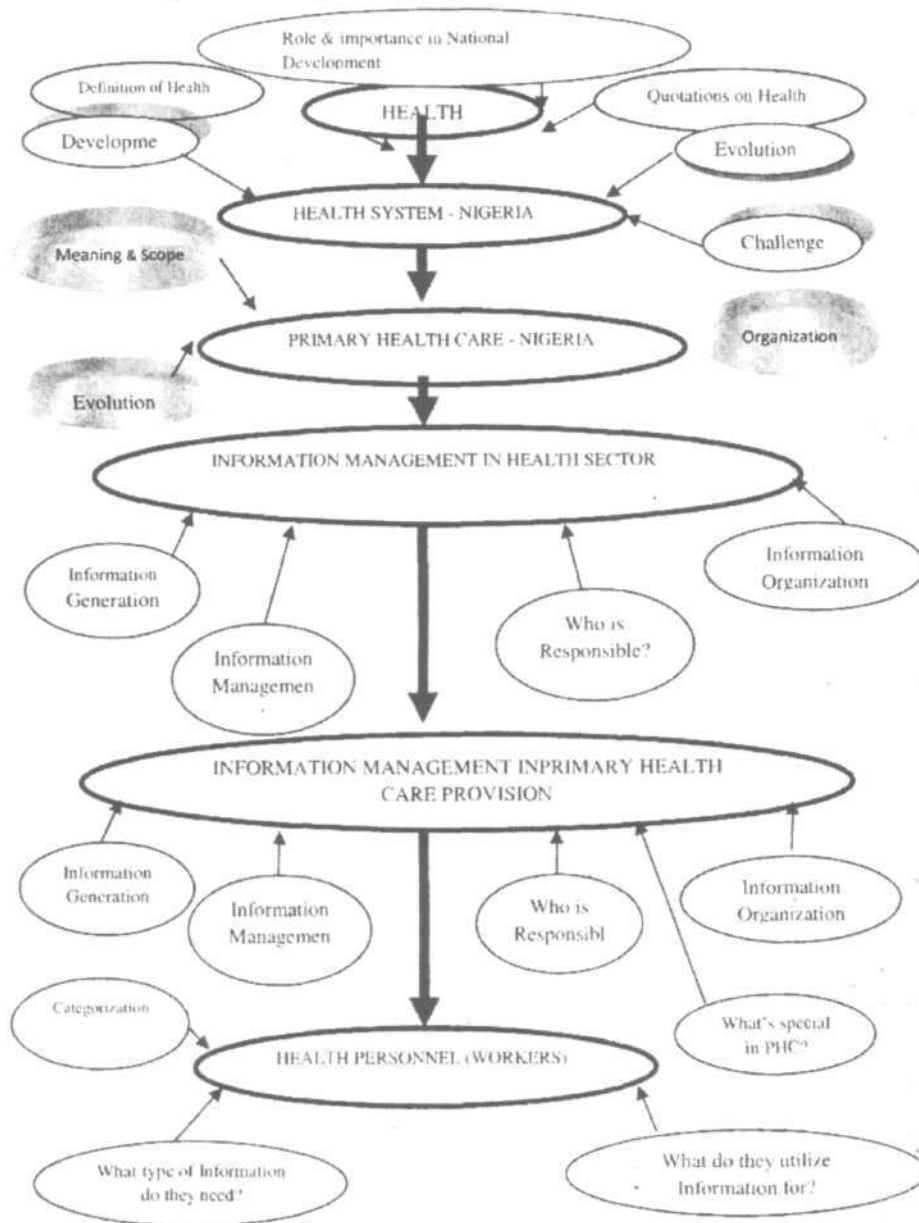
FIG 3: Designing a framework or outline



2.11 Concepts Mapping

Concept mapping is the process of identifying ideas to discuss under each concept of the outline. It is like fleshing the skeleton created as the framework. The concepts mapped out could cover definition, importance, function, history, etc. of the concepts. The researcher should list all the related ideas without writing sentences and should arrange them in a natural sequence. Figure 4 below shows an example of concepts mapping using the title "Awareness, Access and Utilization of Information for Primary Health Care Development in Nigeria."

Figure 4: Concepts Mapping



3.0 Sourcing/searching

Concept mapping is the second to the last stage before getting to the real business of writing out the research work. Haven mapped out all the concepts, the researcher is to proceed to search and source literature for each concept mapped out. Here too, like identifying area of interest/specialization, the researcher needs to create an inventory of literature sourced for each concept. In searching for literature, the researcher moves from sources that are general in coverage, like reference resources, textbooks, to sources that are more specific or specialize in treatment, such as peer review journal, thesis/dissertation. Figure 5 below displays the classification of different literature as general and special. It also presents the level of authority of the resources.

Figure 5: Classification of Information resources



3.1 Search Strategies

Search strategies involve series of processes, techniques and ways researchers adopt in order to locate where information is, its types and formats, and ways of accessing the information. It also involves ways of retrieving, evaluating and utilization of information. Conducting research through the research process using which ever model calls for adaptation of various strategies. This is because every step in the research process may require different strategies.

Qualitative and authoritative information can be found in many places, among which are: the conventional library, which is the traditional four-wall library in which hard and soft copies of print and non-print information resources are systematically acquired, processed, organized, and disseminated. Hence, the conventional library contains physical volumes of books, periodicals, such as newspaper, magazine and journal, reference and information resources like Dictionary, Encyclopedia, etc, and audio-visual information resources, such as cassettes, C D, C D ROM, etc. Searching in the conventional library requires the development of search skills in the use of subject or classified catalogue, abstracts, indexes, bibliographies, etc. The use of these reference tools is a pre-requisite to effective and efficient retrieval of information from the library.

The e-library represents the second place in which information can be accessed. The term is also synonymous with virtual library or digital library. It is a new phenomenon that relies on information and communication technologies, mainly the computer and the internet. The internet contains huge amount of information resources, according to INASP (2011) 3.6 billion pages of information, continually growing and changing. The internet contained basically four main sources of information, which are:

- Search Engines, e.g Yahoo, Google, Alta vista, etc
- Subject Directories, Biological Abstract, Chemical Abstract, Social Science Abstract, etc

- Scholarly Databases, such as AGORA, HINRI, ERIC, TEEL, PUBMED, etc, and
- Information Gateways-Subject Based Information Gateways (SBIGs), which are web site that act as a gateway to other sites and information sources.

Search strategies are highly required for effective internet search more than searching the conventional library. This is because the web is not indexed in any standard, and finding information in the internet can seem very difficult. Below are therefore different search strategies researchers could adopt in order to effectively, efficiently and easily access, evaluate and utilize the vast amount of information in the e-library and by extension the internet

3.1.1 Thesaurus Search

This is the first strategy a researcher needs to adopt. The researcher needs to define and understand the major variables, concepts, keywords, etc in his research work. The relationship between the concepts, synonyms and hierarchical nature of the terms will have to be well established before starting any search. Therefore, the thesaurus search helps in selecting appropriate terms, ensuring the most comprehensive retrieval. Thesaurus allows browsing terms in a hierarchical index and helps in defining more accurately what to look for. Using a thesaurus is a more powerful way to identifying relevant descriptors, along with related terms.

The thesaurus shows variables, concepts, keywords, etc in hierarchical display that indicates a term and its hierarchy, including its Scope and History Notes. The hierarchical displays are: Use For (UF), Broader Terms (BT), Narrower Terms (NT), Related Terms (RT) and See Also (SA). For example if searching for the word "Biochemical genetics", the researcher should know that the term can be Used For 'Chemical genetics', it's BT will be

Biochemistry, while it's NT could be, Chemogenomics, DNA damage, DNA repair, Genetics toxicology, Pharmacogenetics.

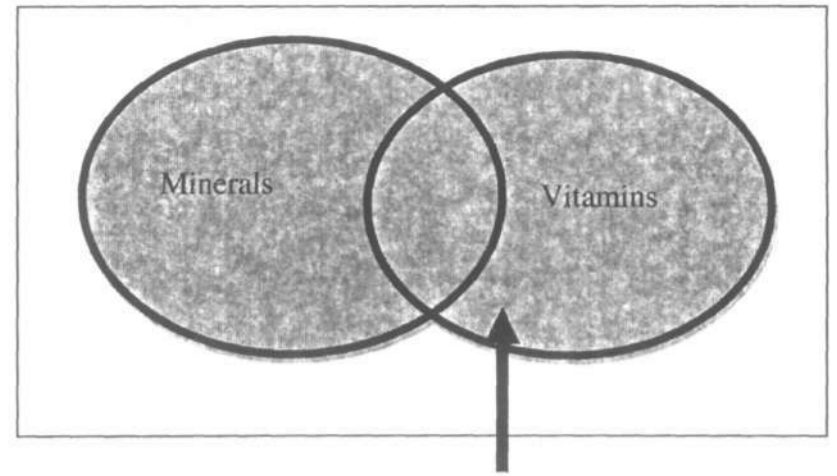
3.1.2 Phrase Search

Having identified, defined and agreed on the terms researcher wants to adopt, he can proceed with phrase search. This type of search strategy leads to getting an exact match of what the researcher is looking for. The search strategy requires putting the phrase or variable under search in enclosed quotation marks eg "Biochemical genetics". When this is done, the researcher has narrowed his search result to only documents on biochemical genetics. The information system will not give you documents that have, say, biochemistry, genetic toxicology, etc

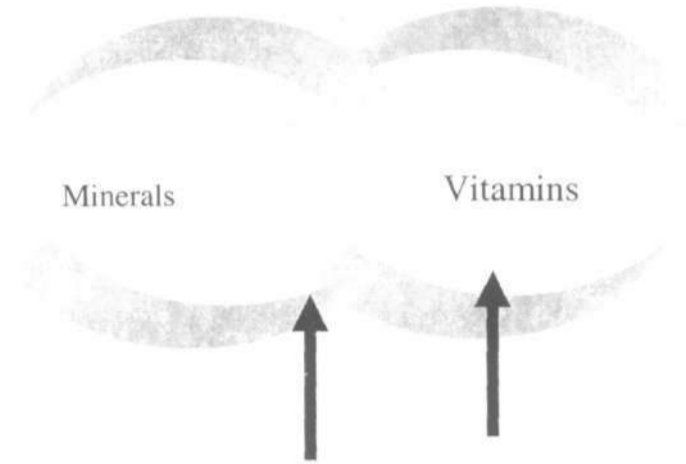
3.1.3 Advanced Search

The advanced search is achieved through the use of what is called Boolean Operators. The Boolean operators help define the relationships between words or groups of words. Using one or more Boolean operators, the researcher can expand or narrow his searches. He can also use Boolean operators to retrieve documents by grouping, ordering and re-ordering the concepts, keywords, etc. The Boolean operators are as follows:-

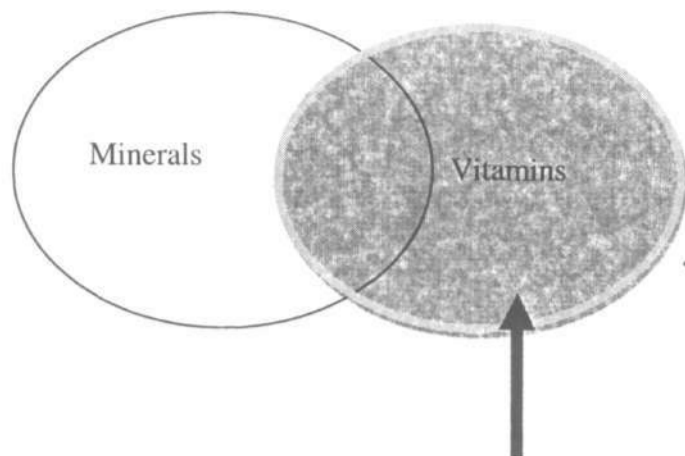
- ❖ AND is used to narrow a search and retrieve records containing all of the words it separates, e.g. Minerals AND Vitamins. Using this operator, the Information System will **only** return pages where the words Minerals and Vitamins all appear somewhere on the page.



- ❖ OR is used to broaden a search and retrieve records containing any of the words it separates.



- ❖ NOT is used to narrow a search and retrieve records that do not contain the term following it.



NB: Phrase searching can also be combined with any of the Boolean operators, e.g 'Global warming' AND 'Sea level rise.'

❖ Wildcard Search. This strategy is used to truncate terms, using the wild card symbol such as * can expand a search term to include forms of a root word, e.g. catalog* retrieves catalog, catalogue, catalogs, catalogues, cataloguing, etc, patent* retrieves patent, patents, patentable, patented, etc.

* Can also be used as Multi-character wildcard for finding alternative spellings. Use to indicate an unlimited number of characters within a word, e.g., behavi*r retrieves behaviour or behavior.

Also ? can be used as Single-character wildcard for finding alternative spellings. The ? represents a single character; two ?? represent two characters; three ??? represent three characters, and so on. Use within or at the end of a word, e.g., wom?n finds woman as well as women, and carbon fib?? finds carbon fiber or carbon fibre.

3.1.4 Search Precision

This is another Search strategy that may be refined by using the following limits (available in 'Advanced Search' and 'Command Search'):

Latest Update: limits your results to include only the most recent records that were added to the database. LISA is updated twice monthly.

Journal Articles only: limits the search to only include the publication type of journal articles

English only: limits retrieval to only records that are available in English.

By Publication Date: limits retrieval to a specific date range.

3.1.5 Sorting and Showing Records

The sorting features give you the opportunity to order your results based on the publication date or relevancy.

Most Recent: First displays the records in order beginning with the most recent.

Relevance Rank: displays records in order based on relevancy. Relevancy is determined through a rating system that weighs the records based on the number of times the term(s) appear in the record and where they appear. While the display features give you the optional formats for displaying the records. Options include displaying the short format, full format, full format-no references and custom format. The 'de-duplication' feature automatically removes any duplicate records that appear in your set of results, which is especially useful when you are cross-database searching. You can also use the 'Show Duplicates' feature to display the duplicates.

3.1.6 Printing, Saving and e-mailing Records

The information resources found during the search can be printed directly or saved into flash drive, hard drive, e-mail, blogs, etc. This function also includes an exporting feature to a number of

bibliographic managers such as Ref Works and the use of our output format editor, QuikBib

3.2 The Arts Method

Presentation of thesis also requires that the candidate organizes the results on paper so that the art method will come out clearly and beautifully. The arts method mainly covers the writing skills employed by researcher in writing out background of the study, significance, literature review and research methodology and the ways research results are presented. These are carried out through essaying. Essay is a term that most students are widely familiar with. Essay means to try or attempt to prove something, rather than to find out. Proving something can be done through many types of essay. Below is some example of types of essay:

- ❖ Expository – Discover the best ways to explain information to readers
- ❖ Narrative – Use for writing stories, true or fictional
- ❖ Descriptive – recounting issues or events
- ❖ Persuasive – Trying to convince a reader to think or act in a certain way
- ❖ Argumentative –
- ❖ Technical or Scientific -

To effectively carry out the arts method, the researcher needs to decide on which forms of basic writing he/she will adopt. However, the researcher can employ one type of essay or the other, in some instances combining as many types of essay as possible. It is also pertinent to mention that it is in presenting the research ideas and results that the arts methods are displayed. The arts method therefore entail how the essaying is carried out; sentence construction, spelling, use of synonymous terms, paragraph design including using headings and subheadings and in the presenting of research results, the use of illustrations, such as tables, charts, etc. This means that pagination, layout, type and color of paper, paper size, order of components and citation style, should be well

presented. Additionally, font size, justification of typing, placement of tables and charts, etc should be maintained

Writing out an essay using any form of essaying and adopting any form of basic writing can be achieved by employing and using writing tools, which include: Dictionary, Thesaurus – Find synonyms and antonyms of words, Book of quotation, Citation Guides, etc. Writing rules and tips – help through the rules, grammar, spelling and word choice.

CHAPTER FOUR

4.0 GETTING TO REAL BUSINESS (WRITING OUT THE RESEARCH)

Writing research consist of two parts; one, writing out the research proposal and secondly, presenting the research results. After spending lot of time conceptualizing the research problem, finding out what other scholars have done in the area and mapping out the framework within which the research work will be carried out, the researcher now get to the real business of presenting his research ideas in a particular order. Writing out the research is carried out in what is called chapterazation. Research proposal are written in three chapters, while the research results presented in at least two chapters. Theses/dissertations are therefore made up of at least five chapters, which include: Introduction, literature review, methodology, data presentation, analysis and discussion, and summary, conclusion and recommendations. Below is full discussion on each chapter.

The structure and style of presentation of thesis differs from discipline to discipline (arts, humanities, social sciences, technology, etc.). In some discipline thesis contains five chapters, while in some may exceed five. However, a typical thesis is made up of what Easterbrook (2010) called thesis skeleton consisting of preliminary pages normally in Roman figures and has a *title page*, an *abstract*, a *table of contents*, etc. Chapter one provides background of the study, Statement of the problem, research questions/hypothesis, etc.

Related literature is reviewed in chapter two and methodology, consisting of population and sample of the study, instrument for data collection, etc is located at chapter three. Data collected for the study is presented, analyzed and discussed in chapter four. While chapter five presents summaries of the study and findings, conclusion is drawn and recommendation put forward. Other components of this chapter include bibliography

and appendixes. However, degree-awarding institutions often define their own house style that candidates have to follow when preparing a thesis document. In addition to institution-specific house styles, there exist a number of field-specific, national, and international standards and recommendations for the presentation of theses,

4.1 Chapter One – Introduction

This represents the first chapter of the research proposal and the final research work. The chapter covers background of the study, statement of the problem, research questions, assumptions, hypotheses and objectives of the study. Others include significance of the study, scope and delimitation, and operational definition of terms.

4.1.1 Writing out the Background of the Study

Background of the study is one of the determinant factors of research. It contains the general description and broader description of the topic. Harvard University Extension School (2003) explained that in the background section, researcher should review what has been done already in this area of research and the way(s) in which the proposed project will differ from earlier works. The researcher should show that he/she is familiar with the major current opinions or interpretations concerning the problem he/she has chosen so that it can avoid duplicating an existing research. The background section's aim is not only to provide simply a general overview of the topic but also to demonstrate that a specific problem has been identified and to show its relationship to the research. The background section has been described as a specialized historical essay. A good background of the study encourages readers to read the research work. Therefore the background of the problem should be:

- (i) Directed specifically to the research problem and must indicate the carefully documented views of experts
- (ii) Well organized; others' research should be considered in a systematic fashion, according to topic, date, perspective, or some other logical means
- (iii) Able to establish the focus of researcher's own research in relation to prior scholarship
- (iv) Detailed with relevant examples that illustrate how researcher's approach to the subject will illuminate it
- (v) It should sketch the background leading to the present application, critically evaluate existing knowledge
- (vi) Specifically identify the gaps that the project is intended to fill.
- (vii) The researcher should present relevant literature that supports the need for his/her research work.

4.1.2 Stating the Problem

The first task, after gaining a sense of direction, is problem recognition and definition, which is the first and most crucial step in the research process, its function is to decide what the researcher wants to find out about. All research begins with a question. Intellectual curiosity is often the foundation of scholarly inquiry. The modern scientific method precludes asking questions that cannot be empirically tested. Defining a research problem provides a format for further investigation. A well-defined problem points to a method of investigation. A problem should be stated and not just mentioned. The way a problem is stated is that it should contain two to three statements. The first statement is the presentation of the ideal or true situation. The second statement brings up the contraction or opposing situation. Some scholars point out that in well stated ideal and contracting situations, the research problem is found juxtaposed in between. The third statement which is optional is called speculative preposition. This is usually stated in question form and helps in formulating the research questions of the study.

The researcher should extensively use literature to prove the statements of the ideal and contracting situations, while, speculative statement may not require the use of any literature. The ideal and contracting statements are presented in few paragraphs, citing relevant literature to support and buttress the statements. Using the example of the above mentioned title of Awareness, Access and Utilization of Information for Primary Health Care Development in Nigeria, the ideal situation could state the fact that for effective development of Primary Health Care in Nigeria, the Nigerian health system has to acquire process and disseminate relevant health information. The health workers too need to be aware, access and utilize health information for effective service provision.

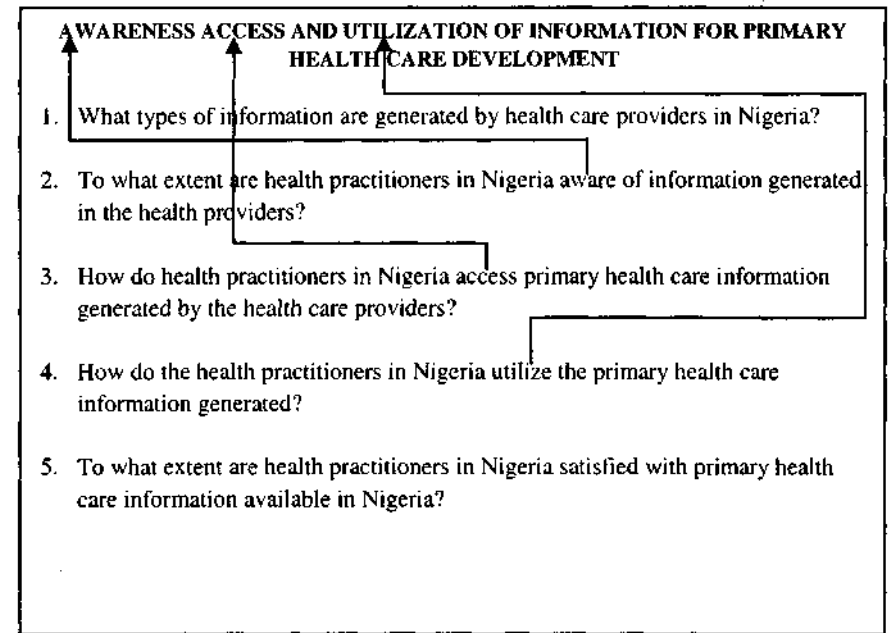
On the other hand the contracting situation could be the researcher's knowledge of the obvious state of affairs on the ground. The knowledge could come from the researcher's personal observation or prove from previous researches. For example, the researcher could state that from observation conducted in some health centers in Nigeria, or citing WHO, UNESCO, UNICEF reports and other literature that there is no effective information system establish in Nigerian health system for the identification, collection, processing, management and dissemination of information in health sector. The speculative statement could be what may possibly have been the reasons for this circumstance? Could it be because of lack of policy, funding, facilities, staffing or what?

4.1.3 Raising the Research Questions

Raising research questions is very central to both quantitative and qualitative research and in some cases may precede construction of the conceptual framework of study. In all cases, it makes the theoretical assumptions in the framework more explicit, most of all it indicates what the researcher wants to know most and first. Hence, research questions must be clear, focused, concise and arguable questions that identify the phenomenon to be

studied. Therefore, they must be accurately and clearly defined and must be raised from the research problem already stated and should cover all the variables indicated in the research topic/titles. This means that for example, as indicated in fig 2 below and using the above mentioned topic, there should be research question(s) on awareness, access and utilization, see Fig 2 below. Research questions are normally stated in numbers. Though there is no agreed numbers of research questions to be raised in a research work, certainly the number should not be too many. Most literature prepares between 3-7 research questions, depending on the number of variable to be investigated and the extent of the research work. In stating research questions, the researcher can avoid being monotonous by adopting the following phrases: 'to determine', 'to find out', 'to ascertain', 'to measure', 'and to explore', etc.

FIG 2: Formulating Research Questions



4.1.4 Stating the Hypotheses

A hypothesis is simply the investigator's belief about a problem, but more specifically it is an intellectual guest that can be subjected to statistical analysis which will lead to either rejection or acceptance of the guest. Hypotheses are normally stated to predict the relationship or difference between two or more variables and are stated in null form in order to make them testable. Therefore, all hypothesis testing is indirect. Strong hypotheses should possess the following qualities:

- Give insight into a research question.
- Are testable and measurable by the proposed experiments.
- Spring logically from the experience of the researcher.
- The formulation of hypothesis provides focus for research work.

- It tells the researcher what specific aspects of a research problem to investigate and what data to collect or not to collect, thereby providing focus to the study.
- As it provides focus, the construction of a hypothesis enhances objectivity.
- It may enable the researcher to add to the formulation of a theory.
- It enables the researcher to specifically conclude what is true or what is false.

Like the research questions, the number of hypotheses should not be too many. Normally, not more than three primary hypotheses should be proposed for a research study.

6.1.5 Formulating the Objectives of the Research

Defining the goals and objectives of a research project is one of the most important steps in the research process. Clearly stated goals keep a research project focused. The process of goal definition usually begins by writing down the broad and general goals of the study. As the process continues, the goals become more clearly defined and the research issues are narrowed. Hence, research objectives should be formulated along the raised research questions. The aim of the research should be to find answers to all the research questions asked. Therefore, the number of research objectives usually corresponds to the number of research questions raised in the study. Fig 3 below presents a sample example of formulating objectives of the research work.

FIG 3: Raising Objectives of the Research

1. To identify the types of information generated on Primary Health Care in Nigeria
2. To determine the extent to which health practitioners in Nigeria are aware of information on Primary Health Care
3. To determine how health practitioner in Nigeria access information on Primary Health Care development
4. To measure the extent of utilization of information for Primary Health Care development in Nigeria
5. To determine the extent to which health practitioners in Nigeria are satisfied with Primary Health Care Information

4.1.6 Assumption of the Study

An assumption is a statement that is presumed to be true without concrete evidence to support it, i.e it is taken for granted or accepted as true without proof. It is stated in simple, brief, generally accepted statement. Although useful in providing basis for action and in creating "what if" scenarios to simulate different realities or possible situations, assumptions should not be accepted as reality without thorough examination.

4.1.7.1 Significance/Justification of the Research

This is where the researcher is expected to convince himself, sponsors, audience, etc about the importance of the

research work he/she is undertaking. The researcher should write about the effect of his/her study, and how it will change things, listing the benefits it will bring, how it will be helpful, to whom and why. It should also describe the contributions of the study as new knowledge, citing the usefulness of the study to the specific groups and making findings more conclusive. Finally, the significance of the research should be able to clearly point out what will likely happen if the study is not conducted.

4.1.8 Scope and the Delimitation of the Research

It is important the researcher narrows down his/her thesis/dissertation topic and limit the scope of the study. The researcher should inform the reader about limits or coverage of the study. The scope identifies the boundaries of the study in terms of subjects, objectives, facilities, area, time frame, and the issues to which the research is focused. Phrases that help express the scope of the study includes: The coverage of this study.....The study consists ofThe study covers theThis study is focus on.....

The delimitation of the study is delimiting a study by geographic location, age, sex, population traits, population size or other similar considerations. Delimitation is used to make study better and more feasible and not just for the interest of the researcher. It also identifies the constraints or weaknesses of the research work which are not within the control of the researcher. Sample phrases that expressed the delimitations of the study include the following: The study does not cover the..... The researcher limited this research to.....This study is limited to.....

4.1.9 Operational Definition of Terms

Operational definition of terms is the process of defining terms as applied to a specific situation to facilitate the collection of meaningful data. When collecting data, it is important to define terms very clearly in order to assured all those collecting and

analyzing the data have the same understanding. Therefore, operational definitions should be very precise and be written to avoid possible variation in interpretations.

Operational definitions serve two essential purposes: (1) They establish the rules and procedures the research investigator will use to measure the key variables of the study; and (2) they provide unambiguous meaning to terms that otherwise might be interpreted in different ways. However, it is important to note that:

- Only important terms taken from the title, statement of the problem, assumptions, hypothesis, and the research paradigm are to be defined.
- The terms should be arranged alphabetically and should be defined lexically and/or operationally.
- The operational definition may include measures or indices used in measuring each concept.

4.2 Chapter Two – Literature Review

Literature review is an integral part of the entire research process and makes valuable contribution to every operational step. Reviewing literature can be time-consuming, daunting and frustrating but is also rewarding. The literature review is especially important because it:

- Obviates the need to *reinvent the wheel* for every new research question.
- Gives researchers the opportunity to build on each other's' work.
- Clarifies the theoretical issues associated with the research.
- Helps to elucidate the significance of the issues to the research community.
- Brings clarity and focus to research problem.
- Improves methodology.
- Broaden the knowledge of researchers.
- Contextualize the research findings.

The process of literature review involves four very important actions, which include the following:

- Citation of the literature to be reviewed
 - Discussion
 - Reviewing and critiquing, providing creative arguments
 - Relating the reviewed literature to the study
- Additionally, literature review should:
- Be organized thematically to confirm to the specific problems
 - Synthesize evidence from all studies reviewed to get an overall understanding of the state of the knowledge in the problem area
 - As much as possible, the review should be limited within certain period of time.
 - A clinching statement showing how the related materials had assisted the researchers in the present study should be the last part.

Literature review adopts in most cases argumentative type of essaying and uses particular connecting words, such as: In support, In addition, In agreement, argues, explores, notes, notwithstanding, observes rather scathingly, clearly, regrettably, overwhelmingly. More subjectively, stated along the same lines, the studies that have been done have concentrated on At the expense of....., it is little hard to see why this is true, elegantly argued, this assertive article persuasively transcends....., provides a fascinating account, theoretically sophisticated, empirically grounded, it is a tour de force, it goes far beyond simply arguing that, present a substantial and stimulating argument, posing far more questions than they could possibly answer, and indeed demonstrating a wide variety of views, many of which seem contradictory and irreconcilable, an admirably thorough explanation, David (2010) reject the definition ofon the grounds that it spreads the scope of the..... too wide, John (2011) seems to define..... more narrowly, Lipton (2011) concurs with

previous scholars in identifying as being with, by no means the definitions of.....encompasses.....

Using these phrases the researcher can offer additic support to claim, confirm unsupported claims and apply cla more widely. The review of literature can also point to contract In reviewing literature, the researcher can also make claim, bac with reasons and support it with evidence, acknowledging responding to other views.

FIG 4: Sample of Literature Review

Yakel [2] investigated specifically amateur FHRs, finding their research to be an on-going process, as meeting one information need usually generated another. Simply gathering genealogical facts was gradually overtaken by the desire to create a more inclusive narrative in the search for connection and meaning. FHR's relevance to self-discovery and collective memory was explored by Yakel and Torres [7] and conceptualized as 'a community of records', the interrelationship of fact, meaning and truth. This shift of researchers' focus from cognitive to more affective aspects illustrates a changing information need as individual FHR progresses.

The same author stated that the complex motivations behind FHR are particularly under-researched, encapsulated by few if any existing models, and characterized FHR as strongly social (groups and sharing), but weakly collaborative (mainly solitary research), with ill-defined activity boundaries making it hard to study within established frameworks [5]. He suggested that the incremental nature of FHR, with continual redefinition of objectives, means that Bates's berry picking model [9] has something to offer in explaining FHR behaviour. In this model of searching, the user's query is continually shifting and is not satisfied by a single retrieved set of results, but rather by a selection of relevant items ('berries') found along the way.

For example, Fulton looked at how its pleasurable aspects as a leisure activity influenced research behaviour [11] and defined FHR as an example of Stebbins's concept of 'serious leisure', the pursuit of a substantial and fulfilling amateur activity often necessitating the development of special skills [12].

FROM: Investigating the information-seeking behaviour of genealogists and family historians Darby and Clough 74 Journal of Information Science, 39 (1) 2013, pp. 73–84

Blogging technology has now advanced to include web 2.0 and multimedia features such as photos, videos, 'gadgets', favourite music, personal biography, 'friends' lists, and links to the blogger's social networking profiles [10]. All of these, in addition to highly customizable backgrounds, allow bloggers to present a wide range of identity indicators [11] and therefore introduce 'richness' to their communications. Jenkins [12] notes that face-to-face interaction remains 'the real thing', but acknowledges the technological progress in CMC and finds virtual world avatars to be 'perhaps, among the most elaborate examples of impression management that one can imagine'. Jenkins then claims that the gulf between face-to-face and digital interaction that Miller [9] identified has been bridged owing to a relative richness in modern CMC. Laughey [13] also proposes that Goffman's theories can be applied to CMC, and Jacobsen [14] endorses the timelessness and versatility of Goffman's theories. More recently, Miller and Arnold [15] viewed online interaction in Goffman's terms by seeing offline interactions as back-stage preparation areas for interactions that occur online.

FROM Liam Bullingham and Ana C. Vasconcelos **The presentation of self in the online world': Goffman and the study of online identities** Published by:
<http://www.sagepublications.com>

Many writers on Librarianship without clear or definite definition have used the term 'reference theory' meaning the 'theory of reference work'. Most of the earlier contributors to the subject such as Bishop (1915:134), Wyer (1930), etc consider reference theory as the study of the various beliefs that librarians hold regarding the amount of information staff should give library inquirer. However later contributors such as Macomber (1986) criticized this view as being a narrow one arguing that, although inquiry work has always been at the heart of reference and information service, it is only a part of reference work. Therefore, they note that reference work is an ongoing process. It is not just the act of answering the question patron asks at the desk. Thus, reference theory must then, in the word of Whittaker (1977:50), be considered to be concerned with everything that reference practice is concerned with, and indeed must draw on reference practice to find much of the raw material it needs to formulate concepts and principles. Of course, as he further notes, just as reference theory draws on reference practice, so should reference practice draw on theory. However, due to lack of theory on which to draw, reference work has been traditionally practiced in an empirical manner.

Comparing the four reference process models, it can clearly be seen that five basic reference process components are common to all. These are the user, the question, the librarian, the resources needed to answer the questions, and the answer. And four main activities, which link these components, can be identified, these are question negotiation, question analysis, search strategy and answer selection. However, the models need expansion before they can provide additional insight into the reference process. Expansion should involve spelling out steps that are too general for testing and listing the values or characteristics (Variables) that each step may assume. Nevertheless, some of the models show an increased model simplification partially compensated for by the introduction of iterative loops.

FROM: Ibrahim Umar (2001) Reference and Information Inquiries, Wait-time and Staff Patterns in Reference Divisions of Nigerian University Libraries. Unpublished Ph.D.

4.2.1 Summary of the Review

At the end of literature review, researchers are expected to provide a summary of the review stating clearly the major literatures discussed with regard to each sub-heading. The best way to provide summary of the review is to look at all the subheadings used to review the literature. The researcher should pencil down what the literature in those sections generally discussed. After identifying what the major literatures say in each section, the researcher should then provide a summary tying together the major issues from the sections using connecting sentences and paragraphs.

FIG 5: Sample of Summary of the Review

From the literature reviewed in this study it could be said that there is no definite definition of the term 'reference theory'. Most of the literature reviewed failed to provide holistic discussions on the theory of reference work. Instead, they try to concern themselves with mainly the type of reference service, reference method, or a combination of type of service, methods and functions of reference service. The developments of reference process models have gone a long way to simplify the intricacies of reference process. All the models reviewed tend to identify the real information needs of the user and how to deliver the pertinent and relevant answers.

In terms of reference staff patterns and status, the models developed by Mardiklam and Kesselman have listed tasks to be performed by reference staff, categorized staff into two levels and compiled under each staff level a list of task to be performed. This model shows that more complex and highly specialized reference and information questions are referred to professional reference staff while the low-level reference and information inquiries are referred to para-professional reference staff.

Characteristics and duration of time taken to provide answers to reference users can categorize the types of reference and information inquiries. In the area of wait time, most of the studies reviewed established that quick reference inquiries take only few seconds to one or two minutes and account for about three quarters of all reference inquiries. While, reference inquiries taking two or more days and requiring extended searches outside the library accounts for the lowest.

FROM: Ibrahim Umar (2001) Reference and Information Inquiries, Wait-time and Staff Patterns in Reference Divisions of Nigerian University Libraries. Unpublished Ph.D.

4.3 Research Methodology

This represents the third chapter or section of research process. The chapter presents the method to be adopted for the research, population of the study as well as sample and sampling techniques. The researcher also discusses his/her instruments for data collection and procedures for data collection and analysis

4.3.1 Methodology Adopted for the Research

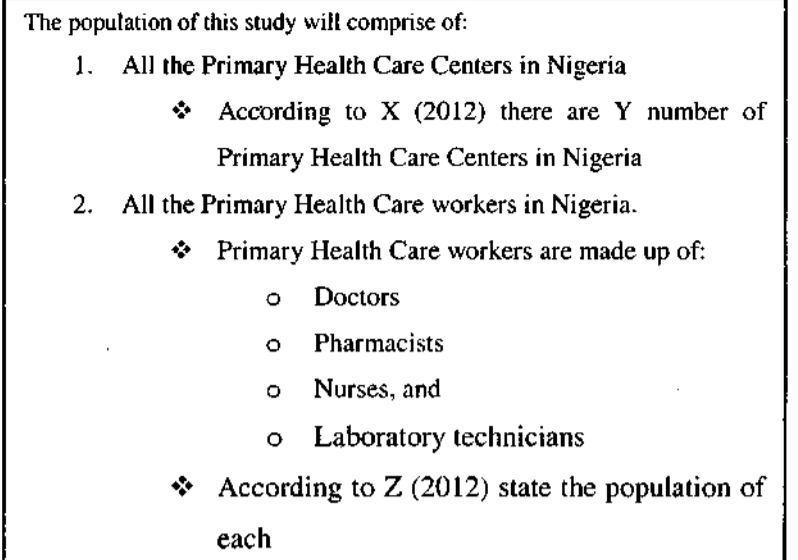
There are various ways of conducting research. Here mentioned must be made of the particular method to be adopted for the research work. The researcher should explain what the method is and stating reasons for its adaptation.

4.3.2 Population of the Research

It is incumbent on the researcher to clearly define the population of his/her study. There are no strict rules to follow, and the researcher must rely on logic and judgment. The population is defined in keeping with the objectives of the study. Sometimes, the entire population is sufficiently small, and the researcher can include the entire population in the study. This type of research is called a *census* study because data is gathered on every member of the population.

The researcher should identify the population in number, stating the source he/she got the figure. He/she should describe the population very well including its characteristics. Some researches may have more than one population. In this kind of research, some scholars try to differentiate between the two populations by calling the first as population of the study, while the other as subject of the study. For instance in a study of Para-professional staff in academic libraries in Nigeria, the academic libraries in Nigeria forms the first population, while the Para-professional staff in these libraries constitutes the second population. To differentiate the two, the later is called subject of the study.

FIG 6: Identifying Population of the Research Work



4.3.3 Sample and Sampling Procedure

Usually, if the population is too large for the researcher to survey all of its members, a small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn. Sampling is also necessary when the researcher is unable to investigate all the members of the target population.

Sampling methods are classified as either probability or non-probability. In probability sampling method, each member of the population has a known probability of being selected. Probability sampling methods include:

1. Random sampling: This is the purest form of probability sampling. Each member of the population has an equal chance of being selected. When there are very large populations, it is often difficult or impossible to identify every member of the population, so the pool of available subjects becomes biased. Random sampling is frequently

used to select a specified number of records from a computer file.

2. Systematic sampling: This is often used instead of random sampling. It is also called an *Nth name selection* technique. After the required sample size has been calculated, every *Nth* member is selected from a list of population members. As long as the list does not contain any hidden order, this sampling method is as good as the random sampling method. Its only advantage over the random sampling technique is simplicity.
3. Stratified sampling: This is commonly used probability sampling method that is superior to random sampling because it reduces sampling error. A stratum is a subset of the population that shares at least one common characteristic. The researcher first identifies the relevant strata and their actual representation in the population. Random sampling is then used to select subjects for each stratum until the number of subjects in that stratum is proportional to its frequency in the population.

In non-probability sampling, members are selected from the population in some non-random manner. These include:

1. Convenience sampling: This is used in exploratory research where the researcher is interested in getting an inexpensive approximation of the truth. As the name implies, the sample is selected because they are convenient. This non-probability method is often used during preliminary research efforts to get a gross estimate of the results, without incurring the cost or time required to select a random sample.
2. Judgment sampling: This is a common non-probability method. The researcher selects the sample based on judgment. This is usually an extension of convenience sampling. For example, a researcher may decide to draw the entire sample from one "representative" city, even

though the population includes all cities. When using this method, the researcher must be confident that the chosen sample is truly representative of the entire population.

3. Quota sampling: This is the non-probability equivalent of stratified sampling. Like stratified sampling, the researcher first identifies the strata and their proportions as they are represented in the population. Then convenience or judgment sampling is used to select the required number of subjects from each stratum. This differs from stratified sampling, where the strata are filled by random sampling.
4. Snowball sampling: This is a special non-probability method used when the desired sample characteristic is rare. It may be extremely difficult or cost prohibitive to locate respondents in these situations. Snowball sampling relies on referrals from initial subjects to generate additional subjects. While this technique can dramatically lower search costs, it comes at the expense of introducing bias because the technique itself reduces the likelihood that the sample will represent a good cross-section from the population.

The advantage of probability sampling is that sampling error can be calculated. Sampling error is the degree to which a sample might differ from the population. When inferring to the population, results are reported plus or minus the sampling error. In non-probability sampling, according to McDaniel and Gates (1991) the degree to which the sample differs from the population remains unknown. Random and systematic samplings are the best methods because they guarantee that each member of the population will have a known non-zero chance of being selected. Fig 5 below demonstrates a situation, using the above mentioned title, how the choice of samples using different sampling techniques can be achieved. The figure shows how three sampling techniques could be applied to a population.

FIG 6: Sample and Sampling Techniques

1. First Population: All the Primary Health Care Centers in Nigeria.
 - Let us assume there are 776 in the country.
 - To draw sample from this population, the researcher should agree on a number, based on a literature, that will be representative of the population, e.g. According to Kielman (1995) a sample of 35% - 43% is considered adequate representative sample in health systems research. Therefore, the researcher can agree, say 40%
 - Thus, $40\% \text{ of } 776 = 310$, this is the total number of sample that the researcher will use
 - How will the researcher select this 310?
 - the researcher can select 310 Primary Health Care Centers randomly across all the state and local government in Nigeria
2. Second Population: All the Primary Health Care workers in the 310 selected Primary Health Care Centers in Nigeria.
 - Let us assume there are:

○ Doctors	=	930	
○ Pharmacists	=	620	
○ Nurses, and	=	1,550	
○ Laboratory technicians	=	310	
○ Total	=	3,410	
 - 3,410 is now the total population of Primary Health Care workers the researcher is going to use
 - Similar to the way the number of sample was agreed on the first population, 40% can also be selected from the 3,410 target population, which will be 1,364
 - Which sampling techniques will be used here?
 - The researcher will use three sampling techniques:
 - Stratified.
 - Proportionate, and
 - Random
 - The researcher has already stratified his/her population of health workers into Doctors, Pharmacist, Nurses and Laboratory technicians
 - Because they are not of equal number, the researcher will select from each stratum, a number proportionate to the population in that stratum
 - 40% can be selected from each stratum, therefore the total sample from each stratum will be:

○ Doctors	=	$930 \times 40\%$	=	372
○ Pharmacists	=	$620 \times 40\%$	=	248
○ Nurses, and	=	$1,550 \times 40\%$	=	620
○ Laboratory technicians	=	$310 \times 40\%$	=	124
○ Total	=	$3,410 \times 40\%$	=	1,364
 - Lastly, the total sample from each stratum will be selected randomly

4.3.4 Instruments for Data Collection

There are very few hard and fast rules to define the task of data collection. Each research project uses a data collection technique appropriate to the particular research methodology. The two primary goals for both quantitative and qualitative studies are to maximize response and maximize accuracy.

Quantitative studies employ deductive logic, where the researcher starts with a hypothesis, and then collects data to confirm or refute the hypothesis. Quantitative analysis is generally fast and inexpensive. Wide assortments of statistical techniques are available to the researcher. Computer software is readily available to provide both basic and advanced multivariate analysis. The researcher simply follows the preplanned analysis process, without making subjective decisions about the data. For this reason, quantitative studies are usually easier to execute than qualitative studies.

Qualitative studies use inductive logic, where the researcher first designs a study and then develops a hypothesis or theory to explain the results of the analysis. Qualitative studies nearly always involve in-person interview, and are therefore very labor intensive and costly. They rely heavily on a researcher's ability to exclude personal biases. The interpretation of qualitative data is often highly subjective and different researchers can reach different conclusions from the same data. However, the goal of qualitative research is to develop a hypothesis--not to test one. Qualitative studies have merit in that they provide broad, general theories that can be examined in future research.

The instruments for data collection therefore include: Questionnaire, Interview, personal observation, known or developed measuring instruments. All developed and adopted instruments need to be validated by the researcher

4.3.5 Questionnaire

A questionnaire consists of a set of questions presented to respondents for answers. The respondents read the questions,

interpret what is expected and then write down the answers themselves. Questionnaire should be developed and tested carefully before being used on a large scale. Although questionnaire is not flexible and takes longer time to complete, it can be used to collect large amount of information at a low cost per respondent and respondents may give more honest answers to personal questions on a questionnaire. It is convenient for respondents who can answer when they have time

Under this section the researcher needs to briefly describe the questionnaire (s) he/she intends to use for data collection. The researcher will have to decide whether he/she is going to use one or more than one sets of questionnaire and the categories of respondents to answer which set of the questionnaire. Haven decide this, the researcher should then briefly describe the contents of each set. Questionnaire is always better structured into sections, with each section aiming to collect particular sets of data. For instance, creating section for collecting bio data information and crafting sections for gathering information on the different research questions and hypotheses formulated. There are three basic types of questionnaire:

- ▲ Closed-ended Questionnaire: Contains questions that include all possible answers/prewritten response categories, and respondents are asked to choose among them, e.g. multiple choice questions, scale questions. Closed-ended questionnaire encourages a short or single-word answer.
- ▲ Open-ended Questionnaire: Contains open-ended questions that allow respondents to answer in their own words. Questionnaire does not contain boxes to tick but instead leaves a blank section for the respondents to write in an answer. An open-ended question is designed to encourage a full, meaningful answer using the subject's own knowledge and/or feelings. Open-ended questions also tend to be more objective and less leading than closed-ended questions. Open-ended questions typically begin with words such as "Why" and "How", or phrases such as "Tell me about...". Often they are

not technically a question, but a statement which implicitly asks for a response.

- ▲ Combination of both: Contains both closed-ended questions and open-ended questions. Begins with a series of closed-ended questions, with boxes to tick or scales to rank, and then finish with a section of open-ended questions or more detailed response.

Whereas closed –ended questionnaires might be used to find out how many people use a service, open-ended questionnaires might be used to find out what people think about a service. A combination of both makes it possible to find out how many people use a service and what they think of the service in the same form.

4.3.6 Attributes of Good Questionnaire

Below are some attributes of good questionnaires

- Questions should be kept short and simple--avoid double barreled i.e. two questions in one –ask two Questions rather than one.
- Avoid negative questions which have *not* in them as it is confusing for respondent to agree or disagree.
- Using closed-ended questions- try to make sure that all possible answers are covered so that respondents are not constrained in their answer. "Don't know" category also needs to be added.
- Avoiding Leading Question: Don't lead the respondent to answer in a certain way.
- Ask easy Questions which respondents will enjoy answering.

- Make Questions as interesting as possible and easy to follow by varying type and length of question.
- Group the questions into specific topic as this makes it easier to understand and follow.
- Layout and spacing is important as cluttered Questionnaire is less likely to be answered.

4.3.7 Interview

An interview is a conversation between two people; the interviewer and the interviewee, where questions are asked by the interviewer to obtain information from the interviewee. It is called an Interview Schedule when the researcher ask the questions (and if necessary, explains them) and records the respondent's reply on the interview schedule. Interview is a quick method and more flexible way of collecting data. It has some drawbacks among which different interviewers may interpret and record response in a variety of ways. Also, Interviewer's manner of speaking may affect the respondent's answers. Most interviews seek to achieve one or more of the following goals:

1. Obtain the interviewee's knowledge about the topic
2. Obtain the interviewee's opinion and/or feelings about the topic
3. Feature the interviewee as the subject

It's important that the researcher knows exactly why he/she is conducting an interview and which goal(s) he/she is aiming for. Thus, the interviewer should stay focused on questions and techniques which will achieve them. The main task in interviewing according to Kvale (1996) is to understand the meaning of what the interviewees say.

Types of interviews

Many literatures have identified three to five types of interview, among which are:

- Informal, conversational interview - no predetermined questions are asked. In order to remain as open and adaptable as possible to the interviewee's nature and priorities, during the interview the interviewer "goes with the flow".
- General interview guide approach. The guide approach is intended to ensure that the same general areas of information are collected from each interviewee; this provides more focus than the conversational approach, but still allows a degree of freedom and adaptability in getting the information from the interviewee.
- Standardized, open-ended interview - the same open-ended questions are asked to all interviewees; this approach facilitates faster interviews that can be more easily analyzed and compared.
- Closed, fixed-response interview. This is where all interviewees are asked the same questions and asked to choose answers from among the same set of alternatives. This format is useful for those not practiced in interviewing.

In order to collect accurate and adequate data using interview schedule, it is very important that the interviewer adopt the following strategies:

- The researcher should do his/her homework very well by having basic knowledge of his/her subjects. If you show your ignorance, you lose credibility and risk being ridiculed, at the very least; the subject is less likely to open up to you.
- The interviewer should have a list of questions. It seems obvious but some people don't think of it. While you should be prepared to improvise and adapt, it makes sense to have a firm list of questions which need to be asked. Of course many interviewees will ask for a list of questions before hand, or the

interviewer might decide to provide one to help them prepare. Whether or not this is a good idea depends on the situation. For example, if you will be asking technical questions which might need a researched answer, then it helps to give the subject some warning. On the other hand, if you are looking for spontaneous answers then it's best to wait until the interview.

- The interviewer should try to avoid being pinned down to a preset list of questions as this could inhibit the interview. However, if you do agree to such a list before the interview, stick to it.
- The interviewer should have back-cut questions, which may be shot at the end of a video interview. Make sure you ask the back-cut questions with the same wording as the interview — even varying the wording slightly can sometimes make the edit unworkable. You might want to make notes of any unscripted questions as the interview progresses, so remember to include them in the back-cuts.
- The interviewer should listen very attentively while the interview is ongoing. A common mistake is to be thinking about the next question while the subject is answering the previous one, to the point that the interviewer misses some important information. This can lead to all sorts of embarrassing outcomes.

4.3.8 Observation

Observation is the act of noting and recording something, such as a phenomenon, with instruments. The phenomenon to be observed can either be an activity of a living being, such as a human, consisting of receiving knowledge of the outside world through the senses, or the recording of data using scientific instruments. Scientific instruments that could be used to collect data through observation includes: weighing scales, clocks,

telescopes, microscopes, thermometers, cameras, and tape recorders, and also translate into perceptible form events that are unobservable by human senses, such as indicator dyes, voltmeters, spectrometers, infrared cameras, oscilloscopes, interferometers, Geiger counters, x-ray machines and radio receivers.

4.4 Validity and Reliability of Research Instruments

Validity refers to the accuracy or truthfulness of a measurement. Is the instrument measuring what it is supposed to. Validity itself is a simple concept, but according to Spector (1981) the determination of the validity of a measure is elusive, this is because as Spector further notes that it is an established principle of measurement that instruments react with the things they measure. Therefore, the concept of instrument reactivity states that an instrument itself can disturb the thing being measured. Validity can be categorized as follows:

- ❖ Face validity is based solely on the judgment of the researcher. Each question is scrutinized and modified until the researcher is satisfied that it is an accurate measure of the desired construct. The determination of face validity is based on the subjective opinion of the researcher.
- ❖ Content validity is similar to face validity in that it relies on the judgment of the researcher. However, where face validity only evaluates the individual items on an instrument, content validity goes further in that it attempts to determine if an instrument provides adequate coverage of a topic. Expert opinions, literature searches, and pretest open-ended questions help to establish content validity.
- ❖ Criterion-related validity can be either predictive or concurrent. When a dependent/independent relationship has been established between two or more variables, criterion-related validity can be assessed. A mathematical model is developed to be able to predict the dependent variable from the independent variable(s).

- ❖ Predictive validity refers to the ability of an independent variable (or group of variables) to predict a future value of the dependent variable.
- ❖ Concurrent validity is concerned with the relationship between two or more variables at the same point in time.
- ❖ Construct validity refers to the theoretical foundations underlying a particular scale or measurement. It looks at the underlying theories or constructs that explain a phenomenon. This is also quite subjective and depends heavily on the understanding, opinions, and biases of the researcher. Reliability on the other hand is synonymous with repeatability. A measurement that yields consistent results over time is said to be reliable. When a measurement is prone to random error, it lacks reliability. As noted by Spector (1981) the reliability of an instrument places an upper limit on its validity and any measurement that lacks reliability will necessarily be invalid. There are three basic methods to test reliability which are as follows:
 - ❖ Test-retest measure of reliability. This is achieved by administering the same instrument to the same group of people at two different points in time. The degree to which both administrations are in agreement is a measure of the reliability of the instrument. This technique for assessing reliability suffers two possible drawbacks. First, a person may have changed between the first and second measurement. Second, the initial administration of an instrument might in itself induce a person to answer differently on the second administration.
 - ❖ Equivalent-form technique. The researcher creates two different instruments designed to measure identical constructs. The degree of correlation between the instruments is a measure of equivalent-form reliability. The difficulty in using this method is that it may be very difficult (and/or prohibitively expensive) to create a totally equivalent instrument.

- ❖ Internal consistency. Often describe as the most popular method of estimating reliability. It is achieved when an instrument includes a series of questions designed to examine the same construct, the questions can be arbitrarily split into two groups. The correlation between the two subsets of questions is called the *split-half* reliability, McDaniel and Gates (1991).

Variability and Error

Most research is an attempt to understand and explain *variability*. When a measurement lacks variability, no statistical tests can be (or need be) performed. Variability refers to the dispersion of scores. Ideally, when a researcher finds differences between respondents, they are due to true difference on the variable being measured. However, the combination of systematic and random errors can dilute the accuracy of a measurement. *Systematic error* is introduced through a constant bias in a measurement. It can usually be traced to a fault in the sampling procedure or in the design of a questionnaire. *Random error* does not occur in any consistent pattern, and it is not controllable by the researcher. While the mathematical reliability (repeatability) of a measurement, or group of measurements, can be calculated. However, validity can only be implied by the data, and it is not directly verifiable.

4.5 Pilot Study

A pilot experiment, also called a pilot study, is a small scale experiment conducted in order to evaluate feasibility, time, cost, adverse events and effective size (statistical variability) in an attempt to predict an appropriate sample size and improve upon the study design prior to performance of a full-scale research project. Pilot study is frequently carried out before large-scale quantitative research, in an attempt to avoid time and money being wasted on an inadequately designed project. It can reveal deficiencies in the design of a proposed experiment or procedure and these can then

be addressed before time and resources are expended on large scale studies.

A pilot study is usually carried out on members of the relevant population, but not on those who will form part of the final sample. This is because it may influence the later behavior of research subjects if they have already been involved in the research. It is a potentially valuable insight and should anything be missing in the pilot study it can be added to the full-scale experiment to improve the chances of a clear outcome. Thus, a pilot study addresses a number of logistical issues and therefore as part of the research strategy the following factors can be resolved prior to the main study:

- Instructions given to investigators (e.g. randomization procedures) are comprehensible
 - Investigators and technicians are sufficiently skilled in the procedures.
 - Correct operation of equipment
 - Experimental animal can perform a task (physical or cognitive).
 - Reliability and validity of results
- It is also important to try to:
 - Detect a floor or ceiling effect (e.g. if a task is too difficult or too easy there will be skewed results).
 - Assess whether the level of intervention is appropriate (e.g. the dose of a drug).
 - Identify adverse effects (pain, suffering, distress or lasting harm) caused by the procedure, and the effectiveness of actions to reduce them (e.g. analgesia dose rate and schedule).
- Define early humane endpoints.

The information obtained on logistical issues from pilot study should be incorporated into the main study design. As the purpose of a pilot study is to assess the feasibility of an experiment it is very rarely sensible to present more than summary statistics of

the data. In fact, the data might be irrelevant if problems with the methods are discovered.

If a pilot study does not lead to modification of materials or procedures then the data might be suitable for incorporation into the main study. The sampling strategy used to select subjects and the possibility of changes over time should be carefully considered before incorporating pilot data. Even if the pilot data are not used in this way and even if the final design differs markedly from the pilot, it is useful to include information on the pilot study in any publications or reports arising from the main experiment as this can inform the design of future experiments.

4.6 Procedure for Data Collection

There must always be data that should be collected, organized, analyzed and interpreted in any research undertaking. No research activity can be succeeded without necessary data so the data collection is important phase of the research process. Data collection is therefore the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables the researcher to answer stated research questions, test hypotheses and evaluate outcomes.

Procedure for data collection here means the way(s) the researcher wishes to adopt in order to collect data for the study. Procedure therefore includes time period within which the researcher will take to administer and collect back the instrument, e.g two weeks, one month, etc, who is to collect the data?, the researcher or research assistants?, process of collecting data, personal visits, posting, e-mailing, etc.

4.6.1 Integrity in Data Collection

Accurate data collection is essential to maintaining the integrity of research. Both the selection of appropriate data collection instruments (existing, modified or newly developed) and clearly delineated instructions for their correct use reduce the

likelihood of errors occurring. Consequences from improperly collected data include:-

- inability to answer research questions accurately;
- inability to repeat and validate the study;
- distorted findings resulting in wasted resources;
- misleading other researchers to pursue fruitless avenues of investigation;
- compromising decisions for public policy; and
- causing harm to human participants and animal subjects.

The researcher should note that while the degree of impact from faulty data collection may vary by discipline and the nature of investigation, there is the potential to cause disproportionate harm when these research results are used to support public policy recommendations. Therefore, the primary rationale for preserving data integrity is to support the detection of errors in the data collection process, whether they are made intentionally (deliberate falsifications) or not (systematic or random errors).

4.6.2 Preserving Data integrity

Most et al (2003) describe 'quality assurance' and 'quality control' as two approaches that can preserve data integrity and ensure the scientific validity of study results. According to Whitney, Lind and Wahl (1998) each approach is implemented at different points in the research timeline.

- Quality assurance is the activities that take place before data collection begins. Since quality assurance precedes data collection, its main focus is 'prevention' (i.e., forestalling problems with data collection). Prevention is the most cost-effective activity to ensure the integrity of data collection. This proactive measure is best demonstrated by the standardization of protocol developed in a comprehensive and detailed procedures manual for data collection. Poorly written manuals increase the risk of failing to identify problems and errors early

in the research endeavor. These failures may be demonstrated in a number of ways:

- Uncertainty about the timing, methods, and identification of person(s) responsible for reviewing data
- Partial listing of items to be collected.
- Vague description of data collection instruments to be used in lieu of rigorous step-by-step instructions on administering tests.
- Failure to identify specific content and strategies for training or retraining research assistants responsible for data collection.
- Obscure instructions for using, making adjustments to and calibrating data collection equipment (if appropriate).
- No identified mechanism to document changes in procedures that may evolve over the course of the investigation.

An important component of quality assurance is developing a rigorous and detailed recruitment and training plan. Implicit in training according to Knatterud, et al (1998) is the need to effectively communicate the value of accurate data collection to trainees. The training aspect is particularly important to address the potential problem of research assistants that may unintentionally deviate from the original protocol. This phenomenon, known as 'drift', should be corrected with additional training, a provision that should be specified in the procedures manual.

It is difficult to make generalized statements about how the researcher should establish a research protocol in order to facilitate quality assurance given the range of qualitative research strategies: non-participant/participant observation, interview, archival, field study, ethnography, content analysis, oral history, biography, unobtrusive research, etc. Certainly, researchers conducting non-participant/participant observation may have only the broadest research questions to guide the initial research efforts.

- Quality control is the activities that take place during and after data collection. While quality control activities (detection/monitoring and action) occur during and after data collection, the details should be carefully documented in the procedures manual. A clearly defined communication structure is a necessary pre-condition for establishing monitoring systems. There should not be any uncertainty about the flow of information between principal investigators and research assistants following the detection of errors in data collection. A poorly developed communication structure encourages lax monitoring and limits opportunities for detecting errors.

Detection or monitoring can take the form of direct observation by the researcher/research assistants during site visits, conference calls, or regular and frequent reviews of data reports to identify inconsistencies, extreme values or invalid codes. Site visits may not be appropriate for all disciplines, however, failure to regularly audit records, whether quantitative or qualitative, will make it difficult for investigators to verify that data collection is proceeding according to the procedures established in the research work. In addition, if the structure of communication is not clearly delineated in the procedures for data collection, transmission of any change in procedures to research assistants can be compromised.

Quality control also identifies the required responses, or 'actions' necessary to correct faulty data collection practices and also minimize future occurrences. These actions as noted by Knatterud, et al, (1998) are less likely to occur if data collection procedures are vaguely written and the necessary steps to minimize recurrence are not implemented through feedback and education. Examples of data collection problems that require prompt action include:

- errors in individual data items;
- systematic errors;

- violation of protocol;
- problems with individual staff or site performance; and
- fraud or scientific misconduct.

In the social/behavioral sciences where primary data collection involves human subjects, researchers are taught to incorporate one or more secondary measures that can be used to verify the quality of information being collected from the human subject. For example, a researcher conducting a survey might be interested in gaining a better insight into the occurrence of delinquent behaviors among library users as well as the social conditions that increase the likelihood and frequency of these delinquent behaviors. To verify data quality, respondents might be queried about the same information but asked at different points of the survey and in a number of different ways. Measures of 'Social Desirability' might also be used to get a measure of the honesty of responses. Therefore the researcher needs to cross-check within the data collection process and data quality as much as an observation-level issue as it is a complete data set issue. Thus, data quality should be addressed for each individual measurement, for each individual observation, and for the entire data set.

Each field of study has its preferred set of data collection instruments. The hallmark of laboratory sciences is the meticulous documentation of the lab notebook, while social sciences such as sociology and cultural anthropology may prefer the use of detailed field notes. Regardless of the discipline, comprehensive documentation of the collection process before, during and after the activity is essential to preserving data integrity.

4.7 Procedure for Data Analysis

Analysis of data is a process of inspecting, cleaning, transforming and modeling data with the goal of highlighting useful information, suggesting conclusions and supporting decision making. Data analysis has multiple facets and approaches encompassing diverse techniques under a variety of names, in

different business, science and social science domains. Data analysis can be carried out in several ways, using different types of analyses such as: frequency counts, descriptive statistics (mean, standard deviation, and median), normality (skewness, kurtosis, frequency histograms, normal probability plots), associations (correlations, scatter plots), t-test, χ^2 test, Signed rank-sum test (non-parametric t-test), etc.

Under the procedure for data analysis, the researcher needs to explicitly indicate how he/she intends to carry out the analysis, the type of statistical analysis to be employed whether parametric or non-parametric. If automated statistical packages, such as SPSS will be used, it should be stated. Reasons should also be given for the use of any statistical technique, a kind of justification.

4.8 Data Presentation, Analysis and Discussion

This represents the second segment of research work. Presented as chapter four, it stands as the most important aspect of research work because, the first segment is like a story and the story is made true only in the ways the data is presented, analyzed and discussed, what O'Conner & Cargill (2009) called "take home message," i.e. what the researcher wants readers to remember. Like the first segment, data are presented, analyzed and discussed using essay. However, the first set of data to be analyzed is the response rate.

4.8.1 Response Rate

Response rate also known as completion rate or return rate in survey research refers to the number of people who answered the survey divided by the number of people in the sample. Or the result of dividing the number of people who were interviewed by the total number of people in the sample who were eligible to participate and should have been interviewed. It is usually expressed in the form of a percentage and calculated as:

$$\text{Response Rate} = \frac{\text{Number of Complete Surveys}}{\text{Number of Participants Contacted Surveys}}$$

A low response rate can give rise to sampling bias if the non-response is unequal among the participants regarding exposure and/or outcome. For many years, a survey's response rate was viewed as an important indicator of survey quality. Many observers such as Babbie (1990), Aday (1996) and Rea and Parker (1997) presumed that higher response rates assure more accurate survey results.

Response rate can also be analyzed and discussed, especially the characteristics of the respondents, such as age, qualification, working experience, etc. Some characteristics may directly be related to the research questions or hypotheses raised in the study. In this case, analysis and discussion could be done when the research questions or hypotheses are being treated.

4.8.2 Data Analysis

At the end of the data collection phase of a research project, really all that the researcher got is a bunch of numbers with no apparent order or meaning. The first phase of data analysis involves the placing of some order on that chaos. Typically, the data are reduced down to one or two descriptive summaries like the mean and standard deviation or correlation, or by visualization of the data through various graphical procedures like histograms, frequency distributions, and scatter plots.

Therefore, data may be analyzed quantitatively or qualitatively depending on the level of measurement and the number of dimensions and variables of the study. According to O'Conner & Cargill (2009) data should be verified, analyzed and displayed in order to share, build and legitimize new knowledge. They called this process "turning data into knowledge". Therefore data analysis involves sorting each question in each questionnaire according to its categories with numbers and percentages forming basic descriptive statistics, including needed means and standard deviations (if applicable). It also includes handling and building a database for each questionnaire, including data file for each form (data entry).

Data presentation covers how the findings will be presented in order to answer the research questions/hypotheses and to achieve the overall objectives of the study. Consequently, data should be presented in simple and clear way, and the most important data should be presented most prominent. Thus collected data can be presented as raw numbers in tabular form. For instance, simple frequency table can be used to describe the level of some variables, such as the source through which certain performance was acquired. On the other hand cross tabulation can be used to reveal relation between different variables, such as the level of indicators among beneficiaries and non-beneficiaries between pre and post status. A table is designed to stand alone from the text. Since a table is intended to communicate information, it should be easy to read and understand. It should have a clear title and the rows and columns must be clearly labeled.

Data can also be presented in graphs. Graphs are the simplest and easiest way to present findings. It can summarize a lot of information in a single figure and very informative. Graphs are often excellent way to displaying results. Different types of graphs are appropriate for different experiments, e.g Bar graph, and time - series xy-line scatter plot. To present the relationship between two variables bar chart, pie chart, histogram, line chart and scatter plot can be used as well. For any type of graph:

- The researcher should place his/her independent variable on the x-axis of the graph and the dependent variable on the y-axis.
- Be sure to label the axes of the graph— don't forget to include the units of measurement (grams, centimeters, liters, etc.).
- If the researcher has more than one set of data, he/she should show each series in a different color or symbol and include a legend with clear labels.

Tables and charts are very important in highlighting the information that the researchers want to present. Well-designed tables and charts can raise interest and encourage audience

acceptance and memory retention. More importantly, changes, comparisons and relationships can be best highlighted when presented in a table or chart.

Inferential statistics test hypotheses about differences or relationships in populations on the basis of measurements made on samples. Inferential statistics can help the researcher decide if a difference or relationship can be considered real or just a chance fluctuation. This can be achieved through testing for statistical significance for differences between categories (if needed) and testing for significant relationships (statistical inference). To do this the level of correlation or in the case of differences, the obtained statistical results must be stated. Likewise the level of significance of the difference or association should be indicated before taking decision as whether to accept or reject the hypotheses

The next problem is how does the researcher extract meaningful information from the data he/she presented and analyzed? Analysis of data always leads to stating findings. Therefore, findings need to be discussed and interpreted. It is important that the researcher do not repeat in words all the result from the tables or figure. The researcher needs to establish interconnection between and among data, check for indicators whether hypothesis/es is/are supported or not by findings.

Similarly, the researcher needs to offer explanations for findings, pointing out any exception or any lack of corrections. While discussing the findings, the researcher should equally show how his/her findings and interpretations agree or contrast with previous research findings linking the present findings with the previous literature and supported by reference to relevant literature while indicating the significance of findings, implication of findings (generalization from the result, the meaning of the findings in the context of the research work) should be highlighted.

4.9 Summary, Conclusion and Recommendation

In most researches this section is presented in chapter five, which marks the end of the research work. It presents the

summaries of the research work and major findings, after which a conclusion is drawn. Recommendations are also made from the findings and conclusion of the work.

This represents the last chapter or section of the research work.

4.9.1 Summary of the Study

Summary of the study entails summarizing chapters one to three of the research work. This is done by first of all informing the readers why the topic of the research, what is the background information? Mention can be made of two to three of the research question/hypotheses and objectives of the study. It should be short statement such as the main purpose of the study, the population or respondents, period of the study, method of research used, research instrument and sampling design.

The research must have provided summary of the review under the literature review section. The researcher can use this to give a further summary of what the literature say. Furthermore, the researcher should mention the methodology used, numbers of population and sample respectively and instruments for data collection. Finally, he/she should indicate the procedures employed for data collection and analysis.

4.9.2 Summary of Major Findings

Summary of findings is one of the last parts of thesis or dissertation. It is where major findings of the research is written. Summary of major findings should have the following characteristics:

- Should be written in textual generalization, that is, a summary of the important data consisting of text and numbers.
- Important findings should be included in the summary.
- No new information or data should be included in the summary of findings.

- Should be stated concisely, not explained or elaborated anymore.
- For each of the problems and hypotheses, present the salient findings and results of the hypothesis tested.

4.9.3 Conclusion

One of the important parts of research work is conclusion. Conclusion serves as generalization of the research work. A good conclusion should therefore leave the readers with a clear statement of the researcher points and renewed appreciation of its significance. The following are some characteristics of thesis/dissertation conclusions:

- It should be concise, brief and short yet express all the necessary information resulting from the study as required by the specific questions.
- The question raised at the investigation should be properly answered by the conclusion.
- It should indicate what were learned from the inquiry. On the other hand, it should not be drawn from the implied or indirect effects of the findings.
- It should not be the duplications of any statements anywhere in the thesis. It can be summarized but it is necessary to be worded differently and express the same information as the statements reviewed.
- The use of qualifiers including as probably, perhaps, may be, and the like should be avoided as much as possible so that reader may not feel that the researcher has some doubts about their validity and reliability. It should be written as they are 100% true and correct.
- It should refer only to the population, area or subject of the study.
- It should be based upon the findings. There is no conclusion that is not based upon the findings, which should be logical and valid outgrowths of the findings.

- Flexibility is considered in making of conclusions. It is not a must to state conclusions on a one-to-one correspondence with the problems and the findings as all variables can be subsume in one paragraph.
- Conclusions may be used as generalizations from a micro to a macro-level or vice versa.

4.9.4 Recommendations

Recommendation is written in the last part of the research work. It appeals to people or entities concerned to solve or help solve the problems discovered in the inquiry. The following are some characteristics of recommendations:

- It should seek to solve or help to solve problems discovered in the investigation.
- It should be attainable, practical and feasible.
- It should be valid and rational.
- It should be addressed to person, entities or agencies, or offices who or which are ready to implement them.
- It can also be a recommendation for the continuance of a system or recommendation for improvement.
- It can have recommendation for further research on the same topic but different places to verify the findings of the study.
- There should be no recommendation for the problem or things not yet discovered or discussed.
- It should be based on the findings and conclusion of the study.
- Recommendations may be specific or general or both.
- It should be stated in non-technical language.
- It should be feasible, workable, flexible, doable, and adaptable.
- An action plan is optional.

4.10 Referencing Styles

Correct and consistent use of a standard referencing convention is essential in producing a report, thesis or paper. Referencing a source involves two separate steps:

- Indicating in the body of a piece of work that some material is not entirely original, by providing a short 'identifier' for its source, here called a reference in the text, often called a citation.
- Listing, in a separate section of the work, the full details of the source (in a list of references/bibliography). While list of references contains details only of those works cited in the text, a bibliography includes sources cited and those not cited in the text but which are relevant to the subject.

While it's true that style sheet formatting is only one aspect of the complex task of research writing, it is an important one. Correct formatting can be the difference between a job done and a job done well, APA (2011). Hence more than any other reason, this justifies a student's careful attention to reference style. After all, if a writer can't get all the periods in the right places, how can he or she be expected to correctly calculate an ANOVA or T-test?

The whole purpose of citing sources is to give readers the information they need to locate the various sources the researcher use in the research work. Sometimes, a reader might simply want to read the whole source to learn more about the subject. Other times, a reader might want to find more about the context of the quote—perhaps to check that it really applies in the context in which the researcher is using. In other cases, a reader might want to verify that the writer actually said whatever the researcher quoted them as saying. In all of these situations, the reader should be able to find the original piece of writing based on the information the researcher provides. Thus, proper referencing is one of the main ways for students to avoid being accused of cheating through improperly copying other people's work. So learn to reference fully and properly!

Type of Referencing Styles

There are many different referencing styles available for use by researchers. However, it is important to note that only one type can be used at a time. Below is a list of some of the most popular referencing styles in use -

- ❖ American Psychological Association (APA) Reference Style.
- ❖ Chicago Reference Style
- ❖ Harvard Reference Style
- ❖ Modern Language Association (MLA) Reference Style
- ❖ Turabian Reference Style

However, it is not the intention of this author to discuss any of the above mention referencing styles because time and space will not allow as each one has already been discussed in detail with numerous examples in various publications. Nonetheless, below is a summary list of resources that each referencing style gives detail guideline on how to cite and give reference at the end of the work -

- Articles in journals
- Book
- Chapters in edited books
- Conference papers
- Eric resources
- Internet resources
- Unpublished sources
- Video recordings
- Television programs
- Interviews
- Web sites
- Newspaper/magazine articles
- Encyclopedias and reference books
- Thesis or dissertation

ADDITIONAL ESSENTIAL PARTS OF RESEARCH REPORT

Apart from presenting research work in chapters, which constitutes the main work, there are other essential information that the researcher needs to provide that are not in any of the five chapters. This essential information usually includes abstract, bibliography, appendix or appendices, preliminary pages, etc. Writing them is much easier than Chapters 1-5 because these are simple annotations and/or citations of references, yet they are very important. Below is discussion and sample format of these parts:

5.1 Abstract

Although abstract usually appear at the preliminary pages, it is the last to be written. The blueprint of abstract according to O'Connor & Cargill (2009) is "we did. We saw. We concluded". So abstract should contain the background of the research work, the methods used and list of some major findings. In addition, it should include some recommendations and conclusion. Abstract is normally written in a single line paragraph.

5.2 Bibliography

Bibliography is normally located at the end of the research work, coming immediately after chapter five and specifically after recommendation. Bibliography is different from reference in the sense that it should include all materials used and reviewed by the researcher. It is arranged alphabetically.

5.3 Appendix

An appendix is a self-contained addition to the research work found separately at the end of the research report. It may contain the following:

1. Letters and other forms of communication

2. Instruments used
3. Sample computations
4. Additional tables and figures.

5.4 Preliminary Pages

Traditional written reports tend to be produced in the following format:

- ❖ **Title Page:** Containing title of the Research work, name of the researcher and Purpose of the research work, e.g. “A Dissertation submitted to the Department of Library & Information Science of Ahmadu Bello University, Zaria, in partial fulfillment for the award of Doctor of Philosophy in Library & Information Science”, and date of Publication (see Fig 6).
- ❖ **Page of Certification:** Containing guarantees that the research work with the named title is the bonafide record of work carried out by the researcher for the award of the type and name of degree. The name, date and signature of members of the supervisory committee should be written (see Fig 7).
- ❖ **Table of Contents** In this section is listed the contents of the report, either in chapters or in subheadings.
- ❖ **Dedication Page:** Document the name or names of persons the researcher wishes to commit or devote the work to.
- ❖ **Acknowledgement Page:** This is the page that the researcher appreciates his supervisors and those that helped him/her in one way or the other in conducting the research work.
- ❖ **List of abbreviations:** List all the words that have been abbreviated in the work.
- ❖ **List of Tables and Figures:** List all the tables and figures that appeared in the work.
- ❖ **Typing and Binding of Research Work:** Paper: Bond Paper (need not be executive bond), Size: 8.5inches X 11 inches, Margin: Left- 1.5 inch, Top- 1”, Bottom 1”, Right 1”, and Font: Times New Roman, Font Size: 12, Spacing: Double, Binding: Black Rexene, Gold Embossing on Cover.

Fig 7: Sample of Title Page

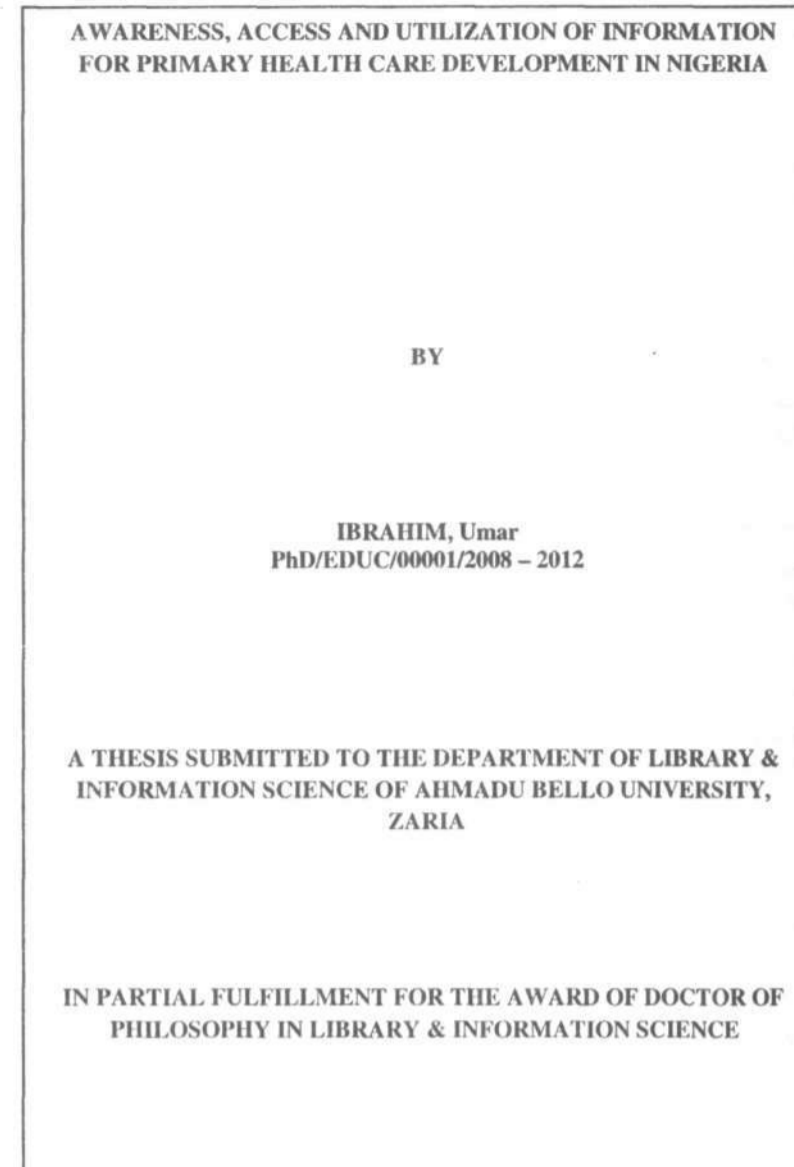


Fig 8: Sample of Certification Page

CERTIFICATION	
<p>This research work entitled: "AWARENESS, ACCESS AND UTILIZATION OF INFORMATION FOR PRIMARY HEALTH CARE DEVELOPMENT IN NIGERIA" By Ibrahim, Umar meets the regulations governing the award of Doctor of Philosophy in Library & Information Science and is approved for its contribution to knowledge and literary presentation</p>	
<p>Prof Umar Ibrahim Chairman, Supervisory Committee</p>	<p style="text-align: center;">Date</p>
<p>Prof Zakari Muhammad Member, Supervisory Committee</p>	<p style="text-align: center;">Date</p>
<p>Prof Tijjani Abubakar Member, Supervisory Committee</p>	<p style="text-align: center;">Date</p>
<p>Prof Usman Umar Head of Department</p>	<p style="text-align: center;">Date</p>
<p>Prof Ahmad Umar Dean, Postgraduate School</p>	<p style="text-align: center;">Date</p>

5.5 Ethical Issues in Research Work

Ethical issues in research work can be treated from two perspectives: Ethical issues concerning research participants and ethical issues relating to the researcher. Those relating to the participants include the following:

i) Collecting information:

- Seeking consent: In every discipline it is considered unethical to collect information without the knowledge of the participant, and their expressed willingness and informed consent. *Informed consent* implies that subjects are made adequately aware of the type of information you want from them, why the information is being sought, what purpose it will be put to, how they are expected to participate in the study, and how it will directly or indirectly affect them. It is important that the consent should be voluntary and without pressure of any kind.
- Providing incentives: Most people do not participate in a study because of incentives, but because they realize the importance of the study. Is it ethical to provide incentives to respondents to share information with you because they are giving their time? Giving a present before data collection is unethical.
- Seeking sensitive information: Certain types of information can be regarded as sensitive or confidential by some people and thus an invasion to their privacy, asking for such information may upset or embarrass a respondent. For most people, questions on drug use, pilferage, income, age, marital status, etc are intrusive. In collecting data you need to be careful about the sensitivities of your respondents.
- It is not unethical to ask such questions provided that you tell your respondents the type of information you are going to ask clearly and frankly, and give them sufficient time to decide if they want to participate, without any major inducement.
- The possibility of causing harm to participant: When you collect data from respondents or involve subjects in an experiment, you need to examine carefully whether their

involvement is likely to harm them in any way. *Harm includes research that might include hazardous experiments, discomfort, anxiety, harassment, invasion of privacy, or demeaning or dehumanizing procedures.* If it is likely to, you must make sure that the risk is minimal i.e. the extent of harm or discomfort is not greater than ordinarily encountered in daily life.

- If the way information is sought creates anxiety or harassment, you need to take steps to prevent this.
- **Maintaining confidentiality:** Sharing information about a respondent with others for purposes other than research is unethical. Sometimes you need to identify your study population to put your findings into context. In such a situation you need to make sure that at least the information provided by respondents is kept anonymous. It is unethical to identify an individual's responses. Therefore, you need to ensure that after the information has been collected, the source cannot be known.

ii) Ethical issues relating to the researcher

- **Avoiding bias:** Bias on the part of the researcher is unethical. Bias is a deliberate attempt to either hide what you have found in your study, or highlight something disproportionately to its true existence.
- **Provision or deprivation of a treatment:** Both the provision and deprivation of a treatment/ intervention may pose an ethical dilemma for you as a researcher. Is it ethical to provide a study population with an intervention/ treatment that has not yet been conclusively proven effective or beneficial? But if you do not test, how can you prove or disprove its effectiveness or benefits?
- **Ensuring informed consent, 'minimum risk' and frank discussion** as to the implications of participation in the study will help to resolve ethical issues.

- **Using inappropriate research methodology:** It is unethical to use a method or procedure you know to be inappropriate e.g. selecting a highly biased sample, using an invalid instrument or drawing wrong conclusions.
- **Incorrect reporting:** To report the findings in a way that changes or slants them to serve your own or someone else's interest is unethical.
- **Inappropriate use of the information:** The use of information in a way that directly or indirectly adversely affects the respondents is unethical. If so, the study population needs to be protected. Sometimes it is possible to harm individuals in the process of achieving benefits for the organizations. An example would be a study to examine the feasibility of restructuring an organization. Restructuring may be beneficial to the organization as a whole but may be harmful to some individuals.
- **Should you ask respondents for information that is likely to be used against them?** It is ethical to ask questions provided you tell respondents of the potential use of the information, including the possibility of it being used against some of them, and you let them decide if they want to participate.
- **Plagiarism:** Do not claim credit for the results of others, do not invent data, or fake results.
- **Authenticity, Accuracy and Originality**

6.1 Dissertation/Thesis Examination or Defense (*Viva Voce*)

One of the requirements for dissertation/thesis defense is often an oral examination. This examination normally occurs after the research work is finished but before it is submitted to the university, and comprises a presentation by the student and questions posed by an examining committee. This exercise is called dissertation/thesis defense or a *viva voce*. Levine (2010) regards thesis defense as a terrible name, because according to him the name seems to suggest some sort of war that the researcher is trying to win. And, of course, with four or five of them and only one of you, it sounds like they may have won the war before the first battle is held. Levine wish they had called it a dissertation seminar or professional symposium.

The oral defense is twofold; the internal defense and the external. In all the defenses the researcher should try to remember that the purpose of the defense is for the researcher to show everyone how well he/she has done in the conducting of the research study. In addition, there should be a seminar atmosphere where the exchange of ideas is valued. The researcher is clearly the most knowledgeable person at this meeting when it comes to the subject of the study. The members of the researcher's committee are there to hear from the researcher and to help him/her better understand the very research that you have invested so much of yourself for the past months. Their purpose is to help you finish your degree requirements.

The purpose of viva according to Tinkler and Jackson (2004) is to ensure that the candidate:

- ☞ Understand very well the area he/she undertook the research work;
- ☞ Is able to locate the dissertation/thesis within a particular context and display knowledge of the research work;
- ☞ Communicate clearly whilst under pressure;

- ☞ Explain and justify/defend his/her work, interpretations and ideas;
- ☞ Demonstrate the ability to critically analyze and evaluate one's findings;
- ☞ Allow examiner to develop further the candidate's ideas and to provide advice on publication; and
- ☞ Test his/her oral skills.

6.2 Strategies for Successful *Viva Voce*

Levine (2010) suggests the following as guide to make thesis presentation a success. The candidate should:

- ❖ Try to attend one or more defenses prior to his/hers. Find out which other students are defending their research and sit in on their defense. In many departments this is expected of all graduate students. At the defense the researcher should try to keep focus on the interactions that occur. Does the student seem relaxed? What strategies does the student use to keep relaxed? How does the student interact with the faculty? Does the student seem to be able to answer questions well? What would make the situation appear better? What things should you avoid? You can learn a lot from sitting in on such meetings.
- ❖ Find opportunities to discuss his/her research with his/her friends and colleagues. Listen carefully to their questions. See if you are able to present your research in a clear and coherent manner. Are there aspects of your research that are particularly confusing and need further explanation? Are there things that you forgot to say? Could you change the order of the information presented and have it become more understandable?
- ❖ Find time to rehearse his/her presentation a number of times. You can do it in front of your colleagues, mates and supervisory committee.
- ❖ Have the feeling when entering your defense that you aren't doing it alone. As was mentioned earlier, your major

supervisor should be seen as an ally to you and "in your corner" at the defense. Don't forget, if you embarrass yourself at the defense you will also be embarrassing your supervisors. So, give both of you a chance to guarantee there is no embarrassment.

- ❖ Not be defensive at his/her defense (this sounds confusing!). This is easy to say but sometimes hard to fulfill. You have just spent a considerable amount of time on your research and there is a strong tendency for you to want to defend everything you have done.
- ❖ Organize the defense as an educational presentation. This can be done by preparing a 20-25 minute presentation that reviews the entire study. This is done through the help of series of power points, 10-12 large pieces of paper, wall charts that have been posted sequentially around the walls of the room. By preparing these wall charts ahead of time the student is able to relax during the presentation and use the pieces of paper as if they were a road map toward the goal. No matter how nervous you are you can always let the wall charts guide you through your presentation.
- ❖ Consider recording his/her defense. You can record your entire presentation and also the questions and comments of the committee members using digital camera. This helps in two ways. First, the student has documentation to assist in making suggested changes and corrections in the dissertation. The student can relax more and listen to what is being said by the committee members. The camera is taking notes! Secondly, the student has a permanent record of his/her presentation of the study. By keeping the paper charts and the record together, they can be most useful for reviewing the research in future years when a request is made for a presentation. (Bring out the record and the pieces of paper the night before your presentation and you can listen to *you* make the presentation. What a good way to review.)

- ❖ Oh, I almost forgot, noted, Levine. There's one last thing, he cautions! Get busy and prepare an article or paper that shares the outcomes of your research. There will be no better time to do this than now. Directly after your defense is when you know your study the best and you will be in the best position to put your thinking on paper. If you put this writing task off it will probably never get done. Capitalize on all of the investment you have made in your research and reap some additional benefit - start writing.

6.3 Examination Results

The result of the examination may be given immediately following deliberation by the examiners or at a later date, in which case the examiners may prepare a defense report that is forwarded to Postgraduate School, which then officially recommends the candidate for the degree. The defense report consists of the scoring of the thesis and written examiners' reports. The examiner's report is made up of 15 items and one of the most important items is that which request that the major contribution to knowledge of the candidate be specified. According to Easterbrook (2010) a thesis for the PhD must form a distinctive contribution to the knowledge of the subject and afford evidence of originality shown by the discovery of new facts and/or by the exercise of independent critical power.

6.4 Potential Decisions (or "verdicts")

Normally there are four types of verdicts in dissertation/thesis defence. At the end of the defence only one of the following will be applicable:

- Accepted / pass with no corrections: The thesis is accepted as presented. A grade may be awarded.
- Accepted/ pass with minor correction: The thesis is accepted subject to correction of numerous grammatical or spelling errors; clarification of concepts or methodology; addition of

sections. In this case one or more members of the jury and/or the thesis supervisor will make the decision on the acceptability of revisions and provide written confirmation that they have been satisfactorily completed. If, as is often the case, the needed corrections are relatively modest the examiners may all sign the thesis with the verbal understanding that the candidate will effect the corrections with his or her supervisor before submitting the completed dissertation.

- **Accepted/ pass after major corrections:** Extensive corrections are required here. Problems may include theoretical or methodological issues, faulty questionnaire, wrong population and sampling techniques, etc. This may lead to going back to the field. After all corrections are effected, the thesis must undergo the evaluation and defense process again from the beginning with the same examiners. A candidate who is not recommended for the degree after the second defense must normally withdraw from the program.
- **Rejected and withdrawn:** The thesis is unacceptable and the candidate must withdraw from the program. This verdict is given when it is crystal clear that the candidate is incapable of making it.

6.5 The Role of Supervisory Committee in Writing and Presentation of Thesis

A thesis or dissertation committee is a committee that supervises a student's dissertation/thesis. This committee, consisting of a major supervisor and one more in case of thesis and two or more in case of dissertation committee members, supervises the progress of the thesis or dissertation and may also act as the examining committee at the oral examination. The committee is assigned to the student by the postgraduate committee, usually after completion of the course work examinations. The committee members have the task of reading the thesis or dissertation, making

suggestions for changes and improvements, and sitting in on the defense.

The researcher must therefore work closely with his/her Supervisory Committee. It is the committee that you must please. Develop a strategy with the Supervisory Committee regarding how and when your writing should be shared. Meet together ahead of time and discuss the strategy you should use at the defense. Identify any possible problems that may occur and discuss ways that they should be dealt with.

Only after your Supervisory Committee approves of what you have done should you think of internal and external defense. The defense meeting allows the concerns of committee members to surface in a dialogical atmosphere where opposing views can be discussed and resolved. The student-supervisor relationship is very important in effective research work. Hence, the role of supervisors should specifically be:

- To read and assess the research work.
- To be available for the candidate and attend his/her *Viva Voce*.
- To meet with co-examiners to agree on issues.
- If possible the Supervisory Committee to hold mock defence as a means of preparing candidate.
- To be friendly, open and supportive is to the candidate and serve as a role model.

6.6 The Role of Supervisee

The supervisory committee cannot function effectively without supervisee performing his/her duties. Therefore, the role of supervisee should include the following:

- To be totally committed and dedicated to his/her research work.
- To write very well and double check his/her research work before submitting to the committee, especially after collecting the work from typist.

6.8 Attributes of a Good Dissertation/Thesis

The essence of going through the entire work with thoroughness and precision enumerated in the preceding sections is to refine the research work so that a very good thesis/dissertation is produced. A research work that the researcher, his/her supervisory committee and the degree awarding department and University will be proud of. Therefore, the following stand as attributes of the above type of research work:

- It should be contestable, proposing an arguable point with which people could reasonably disagree. A strong research work is provocative; it takes a stand and justifies the discussion the researcher presented.
- It is specific and focused.
- It clearly asserts the researcher own conclusion based on evidence.
- It anticipates and refutes the counter-arguments.
- It avoids vague language (like "it seems").
- It avoids the first person. ("I believe," "In my opinion")
- It should pass the so what? Or who cares? Test (Would your most honest friend ask why he should care or respond with "but everyone knows that"?).
- It should be able to instruct and even intrigue a reader.
- It should be the product of both critical thinking and creative writing.

BIBLIOGRAPHY

- American Association for Public Opinion Research (AAPOR) (2008) "Response Rates – An Overview." <http://www.aapor.org/responseratesanoverview> Retrieved on the 23/5/2010
- American Psychological Association (2010) *Publication Manual of the American Psychological Association*. 6th ed. Washington: APA
- Booth, W, Colome, G. G and Williams (2008). *The Craft of Research*. 3rd ed. Chicago: University of Chicago Press. 317p.
- Cargill, M and O'Conner, P (2009) *Writing Scientific Research Articles: Strategy and Steps*. West Sussex: John Wiley & Sons. 173p
- Carmines, E., and R. Zeller, (1979) *Reliability and Validity Assessment*. Beverly Hills: Sage.
- Curtin, Richard, Stanley Presser and Eleanor Singer. (2000). "The Effects of Response Rate Changes on the Index of Consumer Sentiment." *Public Opinion Quarterly* 64(4): 413-428.
- Dawson, Catherine (2002) *Practical Research Methods*, New Delhi, UBS Publishers' Distributors
- Day, R. A and Gastel, B (2006) *How to Write and Publish a Scientific Paper*. 6th ed. London: Greenwood Press
- Easterbrook, S (2010) *How Theses Get Written: Some Cool Tips*. Retrieved from www.cs.toronto.edu/~sme/presentations/thesiswriting on the 23/5/2010
- Eley, A. R and Jennings, R (2005) *Effective Postgraduate Supervision: Improving the Student-Supervisor Relation* Berkshin. Open University Press

- Harvard University Extension School (2003). *A Guide to the ALM Thesis, Sixth Edition*,
 Harvard University Extension School. Retrieved January 16, 2010, from http://www.extension.harvard.edu/2008-09/forms/ext_almg1.pdf;jsessionid= Retrieved on the 23/5/2010
- Holbrook, Allyson, Jon Krosnick, and Alison Pfent (2007). "The Causes and Consequences of Response Rates in Surveys by the News Media and Government Contractor Survey Research Firms." In *Advances in Telephone Survey Methodology*, ed. James M. Lepkowski etc., New York: Wiley.
- Ibrahim, U (2001) Reference and Information Inquiries, Wait-time and Staff Patterns in Reference Divisions of Nigerian University Libraries. Unpublished Ph.D. Thesis. Zaria: Department of Library & Information Science, A. B. U
- Ibrahim, U (2010) Writing and Presentation of Thesis in Postgraduate Education in Nigerian University System: A Companion Guide. Being a Paper Presented at a Two-day Workshop on Postgraduate Research, held on 26th-27, May at the Faculty of Education Conference Room, A. B. U. Zaria
- Ibrahim, U (2011) Developing Search Strategies for Effective Research Output among Staff and Students of Kaduna State University, Kaduna: A Librarian's Contribution. Being a paper presented at the Kaduna State University Seminar Series, held on 24th March, 2011 at the Faculty of Science Lecture Theatre, KASU, Kaduna.
- INASP (2011) Workshop: Accessing Information in Developing Countries- Electronic Information Resources <http://inasp.info/training/training-materials-copyright.html> Retrieved on 16/2/2011
- John, W (2010) How to Organize your Thesis. Retrieved from <http://www.sce.carleton.ca/faculty/chinneck/thesis.html> on the 23/5/2010
- Keeter, Scott, ...etal.. (2006) "Gauging the Impact of Growing Nonresponse on Estimates from a National RDD Telephone Survey." *Public Opinion Quarterly*. 70(5): 759-779.

- Knatterud, G. L.,...etal.. (1998). Guidelines for Quality Assurance in Multicenter Trials: A Position Paper. *Controlled Clinical Trials*, 19:477-493. <http://thesisnotes.com/category/summary> Retrieved on the 23/5/2010
- Kothari, C. R (1985) *Research Methodology- Methods and Techniques*, New Delhi, Wiley Eastern Limited.
- Kumar, Ranjit (2005) *Research Methodology-A Step-by-Step Guide for Beginners*, (2nd.ed.) Singapore, Pearson Education.
- Kvale, Steinar (1996) *Interviews: An Introduction to Qualitative Research Interviewing*, Sage Publications,
- Lancaster, G. A, Dodd, S & Williamson, P. R (2004) Design and Analysis of Pilot Studies: Recommendations for Good Practice. *Journal of Evaluation in Clinical Practice* 10(2): 3-12
- Levine, S. J (2010) Writing and Presenting Your Thesis and Dissertation. Retrieved from www.learnerassociates.net/diss/theses/ on the 23/5/2010
- Lucas, Lisa (2006) *The Research Game in Academic Life*. Berkshires: The Society for Research in Higher Education & Open University Press. 184p
- McDaniel, C. and R. Gates (1991) *Contemporary Marketing Research*. St. Paul, MN: West.
- Modern Language Association (2009) *Handbook for Writers of Research Papers*. 7th ed. New York: MLA
- Okojie, J, Oloyede, I and Obanya, P (2010) (ed) 50 Years of University Education in Nigeria: Evolution, Achievements and Future Directions. Ilorin: University of Ilorin & National Universities Commission
- Okojie, Julius (2010) Policy Directives at the Systems Level: National Universities Commission's Response over the Years
- Okojie, J, Oloyede, I and Obanya, P (2010) (ed) 50 Years of University Education in Nigeria: Evolution, Achievements and Future Directions. Ilorin: University of Ilorin & National Universities Commission

Oloyede, I. O (2009) The Universe in the University: A Speech delivered by the Vice Chancellor of the University of Ilorin on the occasion of the 25th Convocation Lecture, held on 22nd October at the Auditorium

Preddy, L. B (2002) Elements of Information Inquiry & Student Inquiry in the Research Process <http://www.experiment-resources.com/empirical-research.html#ixzz17dCuhJwJ> Retrieved on 16/2/2011

Spector, P. (1981) Research Design. Beverly Hills: Sage.

Tinkler, P and Jackson, C (2004) The Doctoral Examination Process: A Handbook for Students, Examiners and Supervisors. Berkshin. Open University Press.

Visser, Penny,....etal....(1996). "Mail Surveys for Election Forecasting? An Evaluation of the Colombia Dispatch Poll." Public Opinion Quarterly 60: 181-227.

Walonick, D S (1993). The Research Process Minneapolis, MN: StatPac, Inc.
http://mediawiki.dp.teoma.com/wiki/Response_rate" Retrieved on the 23/5/2010
<http://www.answers.com/topic/assumptions#ixzz11AYUUM8> Retrieved on the 23/5/2010
<http://www.businessdictionary.com/definition/assumptions.html#ixzz11AWwwqkM> Retrieved on the 23/5/2010.

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About the Book

Using his experience of teaching research methodology to Postgraduate students over a long period of time and his recognition of those areas students find difficulty in comprehending the research process led to the production of this book. As a companion guide, the book provides essential skills, strategies and techniques of writing and presenting theses/dissertations. The areas covered are quite adequate and very much simplified.

The book introduces the use of framework; concept mapping and using library experience enumerated different search strategies in sourcing and searching both conventional and virtual libraries. The idea of building inventories on literature for all the variables, concepts and keywords identified from the research topic before embarking on writing were discussed and demonstrated. The book also provides stages of theses/dissertations examination or defence, including the role of supervisory committee and strategies for successful *Viva Voce*. Though written specifically for Postgraduate students in Nigerian University system, the book will be very useful to all those aspiring for higher degrees and other potential researchers.



About the Author

Prof. Umar Ibrahim, a Fellow of the Nigerian Library Association (FNLA) was happily born in 1961 in Zaria, Kaduna state. He attended Government College, Kaduna, School of Basic Studies, A. B. U. Zaria and A.B.U. Zaria respectively. He obtained BLS, MLS, Certificate in Computer and PhD with specialty in Information Science.

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