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Mass Communication Research: An Introduction

Adepoju
Tejumaie

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MASS COMMUNICATION RESEARCH: AN INTRODUCTION

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First published in Nigeria in June 2003
Reprinted with revisions, 2017

By: SCEPTRE PRINTS LIMITED
ISBN: 978-2993-63-8

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Printed by:
Sceptre prints Limited
5, Lodge Street, Oke-Ado
Ibadan. Tel: 02-2318159.

DEDICATION

Dedicated to my wife and children, you are the
gifts of God, the Almighty God be your shield
and amour.

*Adepoju
Tejumaiye*

PREFACE

Research (Mass Communication Research) is an area of study students' dread. This unnecessary fear of research by students emanates from the lack of interest of students as well as the approaches teachers of research adopt in the teaching of research.

The idea of this book originates from my Mass Communication teaching experience in tertiary institutions in Nigeria. The institutions include: Babcock University, Ilishan-Remo, Ogun State; Ogun State University, Ogun State; Independent Journalism Centre Ogba Lagos State and Nigeria Institute of Journalism Ogba, Lagos State. The idea of this book also came out of a desire to fill a vacuum. As at today, there is dearth of Mass Communication research books in Nigeria.

This book was also written to convince students that research is as simple as it is taken. The book, **Mass Communication Research: An Introduction** is good for students, journalists, researchers, advertists, public relations practitioners and everybody interested in acquiring knowledge.

The author does not lay claim to perfection. Perfection is celestial and imperfection, terrestrial. This book is a humble contribution of one who strongly desires to share information that could be useful to students, researchers and readers. Any error is mine and is sincerely regretted.

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CHAPTER 1**INTRODUCTION**

One incontrovertible feature of man is his imperfection. This has made man restless and incorporated in him the urge to be perfect, to improve himself, his environment and his relationships with his environment. A veritable avenue for man to improve himself and better his environment is the search for knowledge via asking questions such as: What? Why? When? Who? Where? and How? The continuous and untiring search for answers to these questions constitute the bedrock of research. Rudyard Kipling said that I keep six honest men and they taught me what I know. The six honest men referred to by Kipling are the five W's and H earlier stated. It is imperative to state that research though involves knowing these six honest men. However, knowing these six honest men, vis-à-vis research, and especially in this ever changing world; involve purposeful painstaking efforts.

WHAT IS RESEARCH

Etymologically, the word research is of French origin "researcher". Recherche is from "recherchier", meaning, "to investigate thoroughly". Recherche is divisible into re and cercher. Re mean "again", cercher mean "to search". Joining the two words, research therefore means, "to search again and again and again..." That research is done again and again and again is a realization of the diligence of research. The again and again

nature of research is also indicative of the fact that it is a series of activities aimed at minimizing or eradicating the role of chance.

Research is a systematic way of investigating a phenomenon. It is a series of organized activities aimed at investigating a problem. Uyo (2002) defined research as a systematic attempt to obtain answers to meaningful questions about phenomenon or event through the application of scientific procedures. He reiterated that "it is an objective, impartial, empirical and logical analysis and recording of controlled observations that may lead to the development of generalizations, principles, or theories, resulting in, to some extent, prediction and control of events that may be consequences or causes of specific phenomenon". What is apparent from the above view is that research is scientific and not satisfied with isolated facts, but it seeks to integrate and systematize its findings. In essence, research is concerned with objective verifications, predictions and generalizations.

Research being a systematic and procedural way of investigating a phenomenon, therefore, research is the process of inquiry that adopts the scientific method. Uyo (2002) said thus, "Research is a systematic and organized series of steps that ensures maximum objectivity and consistency in examining a problem". These views raised some fundamental questions about research. They are:

- (1) What is scientific method?
- (2) What is the relationship between research and the scientific method?
- (3) Are researches devoid of scientific method null and void?

SCIENTIFIC METHOD

The scientific method of acquiring knowledge looks at learning as a series of steps i.e. a process whereby a source or sources provide(s) an indication of what may or may not be true and the

"truth" is found only via a series of objective analysis. In essence, the scientific method is self-correcting i.e., changes in thought or theory are noted and corrected when errors in earlier research are uncovered. For instance, scientists change their view of a flat world to a round world consequent upon research; ditto is the change of view by communication researchers about the effect of communication, that is the change from direct effect to indirect effect and to selective effect.

Five characteristics distinguish the scientific method from other methods of knowing (Wimmer and Dominick 1987). They are:

Scientific Method is Public: Science is a public enterprise in which efficient communication among scientists is essential. Each scientist builds on what has been learnt in the past. Day by day his or her findings are compared with other scientists working on the same problem (Nunnally 1978). This presupposes that scientists cannot plead private knowledge, methods and data in arguing for the accuracy of their findings. Also, that scientific information, for several purposes among which includes replication, must be freely communicated from one researcher to another.

Scientific Method is Objective: Objectivity is sacrosanct in scientific method because there is no room for eccentricities of judgment i.e. definite rules and procedures must be constructed and followed by researchers. Objectivity also requires that scientific research deal with facts.

Scientific Method is Empirical: Empiricism is a theory that says that knowledge originates in experience. The origin of the word is Greek-*empeirikos*, from *empeiria*, from *en plus peiran* meaning, "to attempt". That science is empirical is tantamount to the conclusion that researchers are concerned with a world that is knowable and potentially measurable. Researchers must be able to perceive and classify what they study and repudiate any

illogical explanations of events. For example, to say that readers' rejection of a particular newspaper is God's will or that high labour turnover of a particular media house is God's will, will be rejected by scientists for the reason that such statements cannot be perceived, classified, or even measured. However, empirical science does not mean that scientists avoid abstract ideas, but it means that concepts and constructs must be strictly defined to allow for observation and measurements. This in fact accounts for why scientists talk about operational definition in researches.

Scientific Method is Cumulative: No astute researcher can afford not to refer to what has been done in the area he/she is researching into by earlier researchers nor can he/she afford not to make reference to research work done in the related areas he is researching into. The reason is simple. No study stands alone, nor does it rise or fall by itself. Reference to previous researchers' works are always use as building blocks by researchers. This is generally known as literature review or reviewing the literature.

Scientific Method is Systematic: By referring to research work as systematic, this means that scientist always search for order and consistency among their findings. The order and consistency they search for explain the formulation of laws and theories which in turn lead to the advancement of the scientific enterprise.

Scientific Method is Predictive: Scientists are concerned with relating the present to the future i.e. using the status quo as input for change and advancement for the future. In their search for consistency, which ultimately leads to the formulation of laws and theories, scientists strive to improve the lots of man and to know better how to positively utilize the environment for man's good. Note that a law or theory's adequacy lies in its ability to predict an event accurately, if not, such law(s) or theory needs to be re-examined and possibly discarded.

RELATIONSHIP BETWEEN RESEARCH AND THE SCIENTIFIC METHOD

Having earlier discussed the characteristics of the scientific method and defining concisely the meaning of research, it is apparent that both research and scientific method have the same features. Going to the etymology of research which means to search again and again, which is equal in effect to a studious inquiry; then, there is no arguing the obvious. Besides, research is objective, it is systematic and cumulative, it is predictive and of course researchers cannot plead private knowledge, or methods and data in arguing for the accuracy of their findings. Thus, the relationship between research and the scientific method is a symbiotic one. Besides, both are means to an end. In essence, both are conduit to knowledge acquisition.

ARE RESEARCHES DEVOID OF SCIENTIFIC METHOD SHAM?

No doubt, researches that are not predictive, not systematic and cumulative and not empirical cannot generally be described as sham. This is because scientific method is inappropriate in many areas of life such as evaluating works of arts, choosing a religion, forming friendships and even choosing a partner. It is factual that research must possess the qualities of the scientific method. So any research devoid of such features cannot be said to be generalisable. At best, such researches are subjective.

THE DUAL SECTORS OF RESEARCH

Research by practice is divided into two major sectors: (1) Academic and (2) Private. The two sectors are important in mass media research owing to reasons, among which include: (1) The study of communication/mass communication is done in the tertiary institutions, (2) the students of today are

communication/mass communication experts of tomorrow. In any case, academic and private researchers work together to solve media problems.

Academic research is conducted by scholars in tertiary institutions. It is a type of research which generally has theoretical approach. In most cases, the results of such researches are intended to help explain the mass media and their effects on individuals, groups and societies. Private sector research is embarked upon by businesses, industries, research consultants, non-governmental organizations etc. It is generally referred to as applied research. The results are intended to be used in decision-making situations. Applied research explains a situation or problems in order to enable researchers understand it better and proffer solutions. Applied research generally answers the question why, unlike academic research, which is generally focused on what.

DIFFERENCES BETWEEN ACADEMIC AND PRIVATE RESEARCH

ACADEMIC

PUBLIC: Researchers wishing to use information gathered should be able to do so by merely asking for the raw data from the original researcher.

Academicians conduct research at a pace that accommodates their teaching schedules.

EXPENSE: Usually less expensive to conduct because sums of

PRIVATE

The results are the property of the sponsoring agency and cannot generally be obtained by other researchers.

Always operate under strict deadline. The time limit is specified by the management or by requires a decision from the Company.

More expensive than

money cover overhead costs may not be large. academic research due to overhead costs, personnel, time etc.

Nevertheless, it is important to not that despite these differences, academic and private researches are not completely independent of each other. Academicians perform research studies for the industry, private sector groups conduct research that can be classified as theoretical. Besides, many University teachers act as consultants to the private sectors, for the media industry etc. Again, while researches in both sectors; differ occasionally in expense and scope, they use similar methodologies and statistical analysis. More so, both have the same goal: to understand problems and to predict the future.

CLASSIFYING RESEARCH

Research can be classified using some criteria. These include:

- | | |
|----------------------------|------------------------------------|
| (1) Purpose | (2) - Setting |
| (3) Subject/Subject matter | (4) Method |
| (5) Orientations | (6) Time of data collection method |

Classification by Purpose: Purpose is intention i.e. what researchers want to achieve. Under purpose, researchers either intend to acquire knowledge or intend to solve an immediate problem. Classification by purpose has two categories: [1] Basic or pure research, [2] Applied research. The intent in basic research is to acquire knowledge e.g. projects written by students in tertiary institutions. While research(es) undertaken to solve organizational immediate problems e.g. low sales, high labour turnover, poor recall of organizational names etc are applied research.

Classification by Setting: Setting is where research takes place. Research can take place in the Library, Laboratory, gymnasium, bedroom, shopping mall, garage, football field, hotel, artificially

created space etc.

Classification by Subject/Subject Matter: This is the area of endeavor researchers conduct research into: such as: advertising, public relations, marketing, political science, law, economics, sociology, physical and health sciences etc. For instance, research aimed at finding out how many Nigerians support coup-d'etat is political research. Similarly, researches such as finding out how many Nigerians are infected with the HIV Virus/solution to HIV Virus is health research. In the same vein, interest in perception of political advertising by Lagosians is advertising research just as newspaper coverage of crises is mass media research. There is literary research, economic research, legal research, marketing research, biological research, social research etc.

Classification by Method: Method is the modus operandi adopted in research. It is a regular and systematic plan for or way(s) of doing something: habitual regularity and orderliness. Research method is closely associated with research design. Every research method has as its base one or more means of inquiry. There are several research methods in mass communication research. These include: [1] Survey, [2] Content analysis, [3] Historical study, [4] Experimentation study, [5] Case study [6] Observation study, (7) Indepth Survey, (8) Focus Group Discussion

Classification by Orientation: Research orientation refers to approaches embarked upon by researchers in gathering and analysing data. Generally, there are two research orientations: (1) quantitative (2) qualitative. Quantitative orientation is the analysis of phenomenon involving measurements of variables. This approach uses statistical methods to examine and explain variables of study. Qualitative orientation is a description of phenomenon or analysis of same that does not depend on

measurement of variables. This approach does not use statistical methods in examining and explaining variables of study.

Classification by Time of Data Collection: This is the repetitiveness or otherwise of the time data was collected from a representative sample. By this criterion, data are either collected from a representative sample of a population at once or collected from a representative sample of a population at more than one time. By this criterion, research is classified either as **cross sectional or longitudinal**. When data are collected at only one point in time from the same population, the study is cross sectional; while when data are collected at different points in time from the same population, the study is said to be longitudinal. Longitudinal studies are rare in Mass Communication research though they have been among the most stimulating, prominent and influential. According to Wimmer and Dominick (2006), there are three types of longitudinal studies. These are: (1) trend studies, (2) cohort analysis and (3) panel studies. The aim of trend study is to study trends in order to establish verifiable facts. Trend studies are very common during presidential election period. Cohort analysis measures the features of one or more cohorts at two or more points in time. A cohort is any group of individuals linked by having similar significant experiences over time. The significant experiences could be birth, marriage, class, education, vices etc. Panel Studies measure the same sample of respondents at different points in time. Panel studies can reveal net change and gross change in the dependent variable.

RESEARCH DESIGNS

Research design is the frame work or plan for a study that is used in collecting and analyzing a set of data (Campbell, 1998). Sellitz et al (1976) epitomizes the essence of research design when they said that research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine

relevance to the research purpose with economy in procedures. Designing a research is an insurance against failure. It is economical in the long run because it is less likely to result in fruitless inquiry. Babbie (1986) said thus: "ultimately scientific inquiry comes down to making observations and interpreting what you have observed and analysing why and how". According to Asika (1991) research design is the structuring of investigation aimed at identifying variables and their relationship to one another. According to Wimmer and Dominick (1987) "the process of developing or preparing a research study is referred to as research design or experimental design. He said further that there is no particular agreement among researchers as to the definitions of these two terms, but that research design has become a generic term for any type of plan for a research study.

In the words of Uyo (2002), communication research, like research as a whole, cannot be conducted without a design. The design is the plan that specifies: (1) Who (the people or things) to be studied, (2) where they will be studied, (3) when they will be studied and (4) how they will be studied. He asserted that it is because a research design details the nuts and bolts of a study and provides a guide based on agreed principles or roles of the scientific method that the design is a blue print for inquiry into any stated problem. He said further that the design phase of the research process involves numerous activities that may be summarized as follows:

- (1) Determination of the type of research design
- (2) Determination of the research method
- (3) Specification of the sampling plan
- (4) Construction of the data collection instrument
- (5) Specifications of conditions and procedures of observation or administration of field work.
- (6) Specification of methods and techniques of data analysis.
- (7) Enunciation of the limitations of the study.

The ideal research design collects a maximum amount of information with a minimal expenditure of time and resources. Depending on circumstances, a design may be brief or complicated. There is no specific guideline concerning the amount of detail required for a design. What is of great importance is that all research designs incorporate the steps in the process of collecting and analyzing data.

CHARACTERISTICS OF RESEARCH DESIGN

If a study is to produce reliable and valid results, it must possess these characteristics (Haskins 1968). These characteristics are:

- (1) **Naturalistic Setting:** For results of study to have external validity, such study must be conducted under normally encountered environmental conditions, i.e. that subjects should be oblivious of the research situation. Also, normal intervening variables like noise should be recognized in the study.
- (2) **Clear Cause and Effect Relationship:** Researchers must endeavor to rule out spurious independent and dependent variables. They should also interpret results of study with regard to the presence of errors or variables that could confound the results of studies.
- (3) **Unobtrusive and Valid Measurement:** Researchers should construct the instruments used in such ways that there should be no perceptible connection between the communication presented to subjects and the measurement instruments used. The reason is that subjects tend to answer questions differently if they can identify the purpose of the study. Again, the study should be designed to assess both immediate and long-term effects on the subjects. Sample should be large enough to allow detection of minor effects. In addition, dependent variables should be selected based on their relevance to the study and not on convenience.

-
- (4) **Realism:** A careful consideration of the availability of time, money and personnel to conduct the study and researchers who are competent must be done.

TYPES OF RESEARCH DESIGNS

There are basically three types of research designs. They are:

- (1) Exploratory design
- (2) Descriptive design
- (3) Causal design

Exploratory design has as its emphasis, the discovery of ideas and insight. It has as its purpose the formulation of a problem for more precise investigation or for developing hypotheses, i.e., a kind of situation where researchers do not have prior information to make predictions. There are basically three methods in exploratory research designs. They are: [1] A survey of the literature, [2] Experience survey, [3] Analysis of "insight-stimulating" examples or cases, also known as case analysis or case study.

Descriptive design is typically concerned with determining the frequency with which something occurs or relationship between variables. While a typical descriptive study is guided by hypothesis, an exploratory study may not require a hypothesis; it could rely on research questions for instance, a topic like newspaper readership habit of mass communication students with regard to such features as sex, age etc would use a descriptive design.

Causal design is concerned with cause and effect relationship between variables. Causal studies typically take the form of experiments. To establish cause and effect, three conditions must be satisfied.

- (1) The cause must precede the effect;
- (2) The cause and the effect must be associated or related;

-
- (3) Other cause cannot be producing the effect of the cause under consideration.
Examples of causal study include studies in media effects such as violence, sex etc.

Communication/ mass communication researchers should note the following when designing their study.

- (1) There is no hard and fast rule on which research design to use. Besides, each of them should not be taken as absolute distinction as any given study may serve several purposes.
- (2) The best way to proceed is a function of the specific purposes of research to be achieved.
- (3) The three basic designs can be looked at as stages in a continuous process.

MEANS OF INQUIRY

There are several possible approaches to answer research questions. Kerlinger (1973) using definitions provided by C.S. Peirce, more than a century ago discussed four methods of knowing. They are:

- (1) Method of tenacity
- (2) Method of intuition
- (3) Method of authority
- (4) Method of science

Method of tenacity: This method follows the logic that something is true because it has always been so. The idea here is that nothing changes. What was good will continue to be good and what was bad will continue to be bad.

Method of intuition says that something is true because it is self evident or that it stands to reason. This approach is also known as *apriori* approach. An example is the sun which rises from the east and sets in the west.

Method of authority promotes the beliefs that something is true because a trusted source says so. The source may be a pastor, imam, teacher, father, wife etc. Emphasis is on the source and not on the methods the source may have used to acquire the knowledge.

The scientific method preaches that knowledge is acquired through a series of objective analysis i.e. a source or sources/study/ studies provide(s) what may or may not be true and the truth is found through objective analysis of back and forth verification. A good example is the magic bullet theory of the power of the mass media which were latter found incorrect because behaviour and ideas are changed by a combination of communication sources and also that people may react to the same message in different ways. This discovery led to the two-step flow of the mass media and the multi-step flow.

Other methods of inquiry, which one way or the other can be found singly, or in combination in the first set of means of inquiry are: Observation, Interrogation, Manipulation and Abstraction. For instance, if you want to know how many tomatoes are in a basket? The means could be by inspection of the basket-full tomatoes or be interrogating the owner of the tomatoes. Note that the latter has the possibility of giving incorrect information about the tomatoes depending of course on your motive or that of the owner of the tomatoes. At the bottom of any research method used in research, is/are the latter variants of the means of inquiry (Table 1.0).

Means of inquiry	Observation	Interrogation	Abstraction	Manipulation
Research methods				
Survey	✓	✓		
Content Analysis		✓	✓	
Case Study	✓	✓	✓	
Historical Study		✓	✓	
Experimentation				✓
Observation	✓			
Indepth Survey	✓	✓		
Focus Group Discussion				

Table 1.0: Research methods with appropriate means of inquiry

THE RESEARCH PROCESS: SURVEY OF ACTIVITIES-ACKOFF MODEL OF INQUIRY

Research is a series of activities. According to Ackoff (1953), research is a dual process: [1] A problem solving process and [2] A communicative process. As a problem solving process Ackoff meant that the focus is to establish that a problem exists and then researching into the problem. The communication aspect of the process says that the results of research effort are communicated to policy makers, government and decision makers for policy formulation and actions.

According to Ackoff, research involves four communicants. These are: [1] The consumers, [2] The scientist, [3] The observer and [4] The observed. **The consumers** are those who will use the result of a study. **The scientist** produces what consumers will use. **The observer** works with the scientist to ensure objectivity and **the observed** is the phenomenon being studied (figure 1.0)

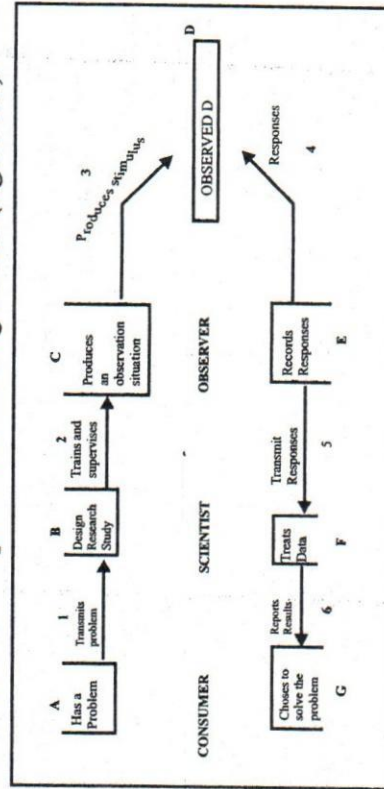


Figure 1.0: Ackoff Model of Inquiry

KEY

A-G (Problem Solving Agents)

1-6 (Communicative Agents).

Ackoff model of inquiry is an over-view of what research is about. This model is one man (Ackoff) view of research model. Like all models, it is not perfect. This model is appealing because it tries to identify the roles and activities involved in the research process. Nevertheless, anyone doing research must go/pass through some stages. *These stages include:* (1) Selection and formulation of problems, (2) Review of studies, (3) Design of study, (4) Collection of data, (5) Interpretation of data, (6) Drawing of conclusion and (7) Writing of report. These stages can be collapsed into five stages. These are: (1) Introduction (2) Review of literature, (3) Method, (4) Data analysis and (5) Conclusion, suggestions and recommendations. **Note that each of these five stages has subs.**

THEORY, RESEARCH AND SCIENCE

Theory, Research and Science are interwoven, they lead to one another. Thomas H. Huxley, a great Nineteenth Century scientist once defined science as: "trained and organized common sense". He added that theory building is something we engage in everyday and every hour of our lives. Similarly, Albert Einstein said: "the whole of science is nothing more than a refinement of everyday thinking". Certainly, it took imagination for Nicholas Copernicus to visualize the sun at the center of our solar system and to break with the astronomy of Ptolemy, which for fifteen centuries had held that the sun revolved around the earth.

According to Severin and Tankard (1982), "every scientist assumes an approach or a particular orientation when dealing with a subject or issue". This approach determines the concepts, questions, perspectives and procedures the scientists apply. This approach also shapes the hypothesis which are tested and eventually the theory which is generated. The approach is the framework within which a theory is tested. The business of science is theory, i.e. theory is the outcome or product of

scientific research. In our field, we wish to be able to make generalizations about the way people communicate i.e. to make predictions about the process and effects of communication. Science like all scholarship is also cumulative, i.e. that it builds on the work which preceded it. Sir Isaac Newton aptly summarized this when he said thus: "if I have seen further, it is by standing on the shoulders of giants".

Science seeks to make generalizations about the nature of reality. Science accomplishes this by repeatedly testing (replication) generalizations (hypotheses) about reality until sufficient confirmations are obtained to warrant calling these generalizations tentative laws (theory). In essence, the tests of generalizations are accomplished through controlled observations research. Therefore, while research is done to fill gaps in knowledge, it has underlined theory whether stated or not. As a logical and procedurally systematic exercise, research is either inductive or deductive. In the deductive model, research is used to test theories and in the inductive model, theories are developed from the analysis of research data. Note that facts that are isolated can be harmonized through theorizing. Also, the way to test the reliability and validity of theory is research. Science on the end of the continuum is a refinement of everyday thinking. So, theory, research, and science are all off springs of knowledge.

RESEARCH IN NIGERIA

Research as a separate area of organizational functions and operations in Nigeria has remained underdeveloped (Asika 1991). Some corporate organizations to say the least do not have a research and development department or a research department, depending on the nomenclature given such unit. In recognition of this problem and the realization of the significance of research in all facets of existence in Nigeria, come about organizations such as: the Nigerian Institute of Social and Economic Research

(NISER); the Nigerian Institute of Tropical Agriculture (NITA); the Nigerian Institute of International Affairs (NIIA); Nigerian Institute of Forestry Research (NIFOR); the Cocoa Research Institute of Nigeria (CRIN); the Institute of Advance Legal studies among others.

The development of research in Nigeria has been slow due to several reasons which include: In appreciation of the role of research in nation building, (2) First generation managers of Nigerian industries were not sufficiently educated and could not appreciate the values of research in industries; in government etc. (3) Complacency with the exportation of our raw materials without a corresponding interest to process these raw materials into finished goods. Other reasons for the slow pace of research in Nigeria are: (4) Embezzlements of public funds, (5) Nigerian economy is a sellers market where there is gross insufficiency of products; goods produced are sold with little or no competition, (6) Lack of challenge to better the qualities of products, (7) Lack or inadequacy of funds to execute researches, (8) High level of illiteracy among the populace which no doubt runs contrary to scientific enterprises, (9) The results of social and business research are usually tentative. This has made it difficult to convince users of such research results to invest their money on an exercise which may not bring immediate gains or results.

QUESTIONS FOR REVIEW

- (1) What do you understand by research?
- (2) How related is research and the scientific method?
- (3) The scientific method is unsystematic, unprocedural and subjective. Discuss?
- (4) The decline in sales of "OLO" detergent is the will of God. How do you understand this statement vis-à-vis empirical scientific method?
- (5) Differentiate between academic and private research?

- (6) Classify and examine thoroughly research, using four criteria of your choice?
- (7) The blueprint for gathering and interpreting data is known as research design. Discuss?
- (8) There are several approaches to acquire knowledge. Identify and examine FOUR of these approaches?
- (9) Research is a series of activities. Examine these activities using Ackoff model of inquiry?
- (10) Theory, Research and Science are interwoven. Discuss?
- (11) Why is the growth of research slow in Nigeria?

CHAPTER 2

ELEMENTS OF RESEARCH

CONCEPTS AND CONSTRUCTS

Concepts are the basic building blocks of theory. They are abstract elements representing classes of phenomena within the field of study, Kerlinger (1973) defined it as a term that expresses an abstract idea formed by generalizations from particulars. Concepts are formed by summarizing related observations. For instance, woman is a concept that expresses certain distinguishable characteristics such as bigger breast, organs for giving birth to babies etc. Similarly, speech anxiety is observable from a public speaker who becomes restless, starts to perspire and continually fidgets with a pencil just before giving an address.

According to Wimmer and Dominick (1987) concepts are important because they facilitate communication among those who have a shared understanding of them. Researchers use concepts to organize their observations into meaningful summaries and to transmit this information to their colleagues and to the public. Concepts being an abstraction from observations enable researchers to look for general explanations or patterns in these observations. In mass communication, terms such as message length, media usage and readability are commonly concepts.

Constructs are higher concept. It is a combination of concepts

created for a particular scientific purpose. Constructs are generally difficult to observe directly; their existence must be inferred from related behaviour patterns. For instance, Negritude, the study of black philosophy is a construct formed from the concept Negro (black). Similarly, authoritarianism is a construct formed from observable exhibitions of behaviors'. Authoritarianism comprises concepts such as conventionalism, submission, superstition, and cynicism. Note that authoritarianism itself cannot be seen nor touched, but its presence is determined by some type of standard test.

VARIABLES AND CONSTANTS

Variables are phenomena or event, concepts or constructs that can be measured or manipulated and that change in values. For instance, age, gender, marital status are variables. The categories of variables are called attributes characteristics that describe the unit of observation. Gender is a concept that has two to three categories i.e. male, female and hermaphrodite. Similarly, marital status has these categories: single, married, divorced, widow/widower. The opposite of variable is **constant**. A constant has only one attribute or category, i.e. it does not change in value. Eating is a constant for human beings. But what is eaten is a variable e.g. eba, amala, ishiewu, rice, beans, bread etc. Social researchers are interested in variables than in constants because variables point to differences in behaviour.

TYPES OF VARIABLES

Variables are classified in terms of their relationship with one another. Generally, researchers talk about **Independent** and **Dependent** variables. Independent variables are systematically varied by researcher, while dependent variables are observed and their values presumed to depend on the effects of the independent variables. The dependent variable is what a researchers explain.

For instance, assume that a researcher is interested in determining the effects/role of music in commercials messages. There are of course different types of music. So, what is being varied here is the music and what is being observed are commercial messages. Therefore, music is the independent variable, while commercial message is the dependent variable.

However, the distinction between types of variable is a function of the research purpose. Therefore, an independent variable in one study may be a dependent variable in another study. Some research tasks may involve examining the relationship of more than one independent variables to a single dependent variable. For instance, a study designed to examine the role of type size and page layout on readership encompassed two independent variables (type size and layout) and one dependent variable (Readership). Similarly, a topic such as the impacts of integrated marketing communications (IMC) on products acceptance involve two or more independent variables and one dependent variable.

Researchers also talk about some other variables which one way or another are present in their research or influence researches. *These variables include:* [1] Predictor or antecedent variables, [2] Criterion variables and [3] Control variables.

While **predictor** variable is used for predictions or is assumed to be casual i.e. analogous to the independent variable, the **criterion** variable is used for predictions or is assumed to be affected i.e. analogous to the dependent variable. When researchers account for or control variables of certain types for the purpose of eliminating unwanted influences, they talk about **control** variables. Control variables are principally used to ensure the results of studies embarked upon are due to the independent variables, not to some other source(s). Other uses of control variables include dividing subjects into specific relevant

categories. However, it must be understood that total control over all aspects of research is impossible. This impossibility must be accounted for in the interpretation of results.

MEASUREMENT

Mass communication research like all research can be qualitative or quantitative. While qualitative research does not require that variables being studied be measured, quantitative research does. Qualitative research includes: focus groups, field observations, in-depth interviews and case studies. Qualitative research has some advantages, which include: [1] Allow researchers to view behavior in a natural setting without the artificiality that sometimes surround experimental or survey research, [2] It can increase researchers' depth of understanding of the phenomenon under investigation and [3] It is flexible i.e. while a questionnaire is unlikely to provide data about questions that were not asked, when you conduct field observation or focus group you might discover facets of a subject that were not even considered before the study began. The disadvantages of qualitative research include: [1] Small sizes of sample weaken generalizations, [2] Reliability of the data can be a problem because researchers must become very closely involved with the respondents, so loss of objectivity when collecting data is possible and [3] If not properly planned, the project may produce nothing of value.

Quantitative research is concerned with how often a variable occurs and it generally uses numbers to communicate this amount. It has the following advantages. [1] Use of numbers allows greater precision in reporting results, [2] It permits the use of powerful methods of mathematical/statistical analysis which leads to active cognizance or errors.

Albeit, while frictions existed in the past as to whether mass communication research should be qualitative or quantitative,

what is of importance in the contemporary time is that both types of research [qualitative and quantitative] aim at gaining good understanding phenomena.

NATURE OF MEASUREMENT

Measurement is the assignment of numerals to objects, events or properties according to certain rules. Examples include: inflation has declined by four percent; Sade is 10 years old; unemployment increased by six percent; Joseph is four ft tall etc. Note that in mass communication research, like other social research, researchers usually measure indicators of the properties of individuals or objects rather than the individuals or objects themselves. Thus constructs such as authoritarianism or motivation for reading the newspapers and listenership cannot be directly observed but must be inferred from presumed indicators. Therefore, if someone endorses statements such as: "Laws and order are the most important things in life" and "orders must be obeyed first before complaining", it can be deduced that such a person is authoritarian than someone who disagrees with the same statements.

There are some concepts that can be measured easily and there are some that cannot. For instance, age, weight, height can be measured easily while gender cannot. What can be said about gender is: the fellow is a male or a female or even hybrid of the two sexes. In essence we cannot measure gender but we can categorise it. From the aforesaid, it is apparent that we can measure variables and classify constants. Classification is however a form of measurement [Nominal measurement]. In all in order to measure variables and classify constants, researchers must use existing measurement scale, i.e. constructs rules to specify the way numerals or numbers are to be assigned.

LEVELS OF MEASUREMENT

There are four different ways to measure phenomena. These are: [1] Nominal level, [2] Ordinal level, [3] Interval level and [4] Ratio level.

Nominal Level: This is the weakest form of measurement. Here, numerals or other symbols are used to classify persons, objects or characteristics e.g. in the physical sciences, rocks are classified as (1) Igneous (2) Sedimentary (3) Metamorphic. A researcher who assigns a "1" to Igneous, a "2" to Sedimentary and a "3" to Metamorphic has formed a nominal scale. In essence, the numerals are simply labels standing for the respective categories i.e. they have no mathematical significance. "3" does not have more rock than those in category "1" or "2". Other examples of nominal measures are numbers on football jerseys, automobile plate number, social security number, classifying respondents according to the medium they depend on for information etc. The characteristics of nominal measurement are: (1) Equivalence i.e. objects in category "1" is equal to other objects in other category. (2) All categories are exhaustive and mutually exclusive i.e. each measurement is appropriate to one category only. Nominal measurement is frequently used in mass media research.

Ordinal Level: This form of measurement rank measure along some dimension, usually from smaller to greater. For instance, socio economic status can be measured by categorizing families to class: Lower, Lower middle, middle, upper middle, upper. A rank of "1" assigned to lower, "2" to lower middle, "3" to middle etc. Note that these numbers have some mathematical meaning i.e. families in category "3" have a higher socio economic status than families in "2". Note however that nothing is specified with regard to the distance between any two rankings. Ordinal measurement is comparable to a horse race without a stopwatch. Of course, the order in which the horses finished is relatively easy

to determine, but it is difficult to calculate the difference in time between the winner and the runner-up. Characteristics of ordinal measures are:

[1] Equivalence e.g. in the socioeconomic status example, all families placed in a category are treated equal, albeit, some might have greater incomes than others (2) order among the categories i.e. any given category can be defined as being higher or lower than any other categories. Examples of ordinal measures are ranking of football teams on table ranking during league matches, military ranks, and beauty pageants finishing order. Ordinal measures are frequently used in mass communication research.

Interval Level: When a scale has all the properties of an ordinal scale i.e. equivalence and order and the intervals between adjacent points on the scale are of equal value, the scale is at the interval level. The most obvious example is temperature. Interval scale incorporates the formal property of equal differences that is, members are assigned to the positions of object on an interval scale in such a way that one may carry out arithmetic operations on the differences between them. Its drawback is that it lacks true zero point or a condition of nothingness e.g. it is difficult to say that a person has zero intelligence or zero personality. This lack of zero-point means that the researcher cannot make statements of a proportional nature i.e. someone with an IQ of 100 is not twice as smart as someone with IQ of 50. Similarly, someone with an accommodation level of 30 is not three times as accommodating as a person who scores 10.

Ratio Level: These are measurements that possess these properties: (1) Equivalence (2) Rank order (3) Equal value of adjacent points and (4) Zero point. Time and distance are ratio measurement. Ratio scales are relatively rarely used in mass communication research. Speed of a car is at the ratio level. It goes therefore that a car traveling at 50 miles per hour is going twice as fast as a car on 25 miles per hour.

SCALES AND INDEXES

Scales and indexes are composite measures of variables, i.e. they are measurements based on more than one item. Both are generally used with complex variables that do not easily lend themselves to single-item or single indicator measurement. Both scales and indexes are ordinal measures of variables. Both rank-order people and other units of analysis in terms of specific variables such as: religiosity, alienation, intellectual sophistication. In essence, a person's score on a scale or index of religiosity gives an indication of his or her relative religiosity vis-à-vis other people. Some items such as newspaper circulation, newspaper sales, products sales etc can be adequately measured with scales and indexes. Others which bother on attitude, opinions, feelings, appreciation or understanding cannot be easily measured except with scales or indexes. For example, attitudes toward television news, the perceptions of public relations, etc require scales.

The commonly used scale in mass communication research is the Likert scale; followed by the semantic differential scale. While scales typically have formalized rules for developing the multiple indicators and assembling them into one composite value, indexes generally do not have detailed rules. Scales take advantage of any logical or empirical intensity structure that exists among different indicators of variable. Indexes are based on the simple cumulation on indicators of a variable.

TYPES OF SCALES

Likert Scale: Pioneered by Rensis Likert, Likert scale represents a systematic and refined means for constructing indexes from questionnaire data. Likert scale is associated with a question format frequently used in contemporary survey questionnaires. The respondent is presented with a statement in the questionnaire

and is asked to indicate whether he strongly agrees, agrees, neutral, disagrees, strongly disagrees. Note that modifications of the wording of the response categories are allowed e.g. "approve" can be used.

The particular value of this format is the unambiguous ordinality of response categories i.e. if respondents were permitted to volunteer or select such answers as "sort of agree", "pretty much agree", "really agree" etc., the researcher would find it impossible to judge the relative strength of agreement intended by the various respondents. Thus, the Likert format resolves this dilemma. Again, it is worthy of note that the uniform scoring of Likert item response categories assumes that each item has about the same intensity as the rest. The Likert format also lends itself to a rather straightforward method of index construction. Since identical response categories are used for several items intended to measure a given variable, each such item can be scored in a uniform manner with five response categories scores of 0 to 4, or 1 to 5 might be assigned, taking the direction of the items into account e.g. assign a score of 5 to strongly agree, 4 to agree, 3 to neutral, 2 to disagree and 1 to strongly disagree. Example of Likert scale is figure 2.1. Note that each response option is weighted and each subject's responses are added to produce a single score on the topic.

Figure 2.1: Sample of Likert Scale Items

Campus cultism is against societal beliefs/norms:	
Response options	Score assigned
Strongly agree	5
Agree	4
Neutral	3
Disagree	2
Strongly disagree	1
28	

Another commonly used scaling procedure in mass communication research is the **semantic differential scale**. According to Charles Osgood and associates who developed this technique, "to use this technique, a name or concept is placed at the top of a series of 7 point scales anchored by bipolar adjectives". To begin, you must determine the dimensions along which each selection should be judged by respondents. Then, you need to find two opposite terms representing the polar extremes along each dimension. Below is a typical semantic differential scale on what respondents know about Tell magazine.

Tell Magazine is:							
	-3	-2	-1	0	1	2	3
Biased	-	-	-	-	-	-	- Unbiased
Valuable	-	-	-	-	-	-	- Worthless
Unfair	-	-	-	-	-	-	- Fair
Good	-	-	-	-	-	-	- Bad
Trustworthy	-	-	-	-	-	-	- Untrustworthy

Figure 2.2: Sample of Semantic Differential Scale Items

RESEACH QUESTIONS AND HYPOTHESIS

No scientist or researcher can begin a study without a problem or question to test. In fact, the bedrock of research is to answer as many questions as possible. To begin a research without research questions is akin to starting a journey without a defined place to begin the journey. Research needs a statement or question to test.

Research utilizes a variety of approaches to help answer questions. While some researches seek to solve relatively simple problems, some are based on theory and they require formally worded questions. Similarly, researches generally start with some tentative generalizations regarding a relationship between two or more variables. These generalizations may either be

research questions and or statistical hypotheses. The two are identical i.e. used for same purpose; however, while hypotheses predict an experimental outcome research questions do not.

RESEARCH QUESTIONS are often used in problems or policy-oriented studies where researchers are not really interested in testing the statistical significance of their findings. For instance, researchers interested in newspaper circulation problems or newspaper readership problems would be concerned only with discovering general indications not with gathering data for statistical testing. Research questions are used more in areas that have been studied marginally or not at all, i.e. they are used more in exploratory research. Research questions may be stated as simple questions about the relationship between two or more variables or about the components of a phenomenon. For example, researchers might ask: how does the content of products advertisement differ from corporate advertisement; or how do television commercials influence the youths.

HYPOTHESES: Hypotheses are statements concerning two or more variables to find out their relationship. Hypotheses could be a fact or body of facts of which we want to find out their relationship. It could also be viewed as statement not proved but assumed to be true for purposes of argument or further study. Hypotheses offer researchers a variety of benefits. These include: [1] They provide direction for a study, [2] They eliminate trial and error research i.e. uncoordinated investigation of a topic, [3] Hypotheses help rule out intervening and confounding variables i.e. they focus research to precise testable statements, other variables relevant or not are excluded, [4] Hypotheses allow for quantification of variables i.e. makes operationalisation of concepts easier and words incapable of quantification are excluded.

According to Wimmer and Dominick (1987), a useful hypothesis should possess four characteristics. These are:

- (1) Compatible with current knowledge in the area
- (2) Should follow logical consistency
- (3) Should be in parsimonious form.
- (4) Should be testable.

That hypothesis be compatible with current knowledge mean that if available literature strongly suggests one point of view, researchers who develop hypotheses that oppose this knowledge must provide basis, else, he/she slows down the development of that area. That is should follow logical consistency mean that if a hypothesis suggests that $A = B$ and $B = C$, then A must be equal to C . For instance, if reading regularly the Guardian newspaper and Tell magazine implies knowledge of current events and knowledge of current events is tantamount to greater participation in political, economic and social activities, then, readers of Guardian and Tell magazines should exhibit greater participation in political, economic and social activities.

That hypotheses must be in their parsimonious form is obvious. Research is a complex exercise, so the concept of the simpler the better should run through every research undertaking. Therefore, it is better to state hypotheses in simple form and contribute to making the research process simpler than to write hypotheses in complicated form. Developing untreatable hypotheses is unproductive and such adds nothing to knowledge.

TYPES OF HYPOTHESES

There are three types of hypotheses using nature as criterion. These three types are:

- (1) Descriptive hypotheses
- (2) Comparative hypotheses
- (3) Relational hypotheses

There is only one variable in **descriptive** hypotheses. Like its name, it merely described actions. E.g., there are more male students in Olabisi Onabanjo University (OOU) than female students. The variable of interest is sex **Comparative** hypotheses look at the similarities or differences of/between variable being tested. E.g., Female students in OOU read newspapers more than the males. **Relational** hypotheses examine the relationship between the variables being tested i.e. it examines whether the variables are directly or inversely related. E.g. Figure 2.3

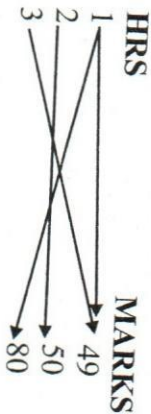


Figure 2.3: Hours of books read and marks scored

Key: HRS Hours

Under normal circumstances, he who spends more time reading should score more marks (Direct relationship). But where he who spends less time reading had more marks (inverse relationship). The variables being tested are hours spent reading and marks scored.

Hypotheses are given different names. These are:

- (1) Research hypotheses HI
- (2) Alternative hypotheses HA
- (3) Null hypotheses HO

Note that each is put into different but related uses.
For example:

HI: People with low level of education will have high credibility in the media.

HA: People with high level of education will have low credibility in the media.

HO: There is no relationship between education and media

credibility.

Note that it is the null hypotheses (HO) that is tested. HO is either accepted or rejected. In practice, researchers rarely state the null hypotheses, since every research hypothesis does have its logical alternatives. Therefore, stating the null hypothesis is redundant. However, the HO is always present and it plays important role in the rationale underlying hypotheses testing. In testing hypothesis or what can otherwise be called significance test, the researcher either rejects or accepts the HO. Note that if HO is accepted (supported) HI is rejected; and if HO is rejected, HI is accepted.

TESTING HYPOTHESES

Science does not admit anything as valid knowledge until a satisfactory test of its validity has been completed. It is a mistake to consider hypotheses as facts, no matter how cleverly and systematically they have been arrived at. However, some question must be asked about hypotheses before they are adopted for testing. These questions are:

- (1) Are the terms empirically specific, so that the concepts or variables can be distinguished in concrete situations?
- (2) Is the posited relationship between variables such that it could be verified or nullified by means of empirical operations?
- (3) Is their any prior evidence as to the truth or falseness of the posited relationship?
- (4) Can an appropriate study design be devised?
- (5) Are the variables "context bound" e.g., restricted to play group or gang, or could they be equally well applied to other interactive situations e.g. work group or family?
- (6) Are the generalizations culture bound?
- (7) Can the generalizations be applied realistically to other cultures?

- (8) If other relevant factors are subject to change in the course of the observations, are they adequately specified and enumerated so that the observers can ascertain whether they have changed during the period of observation?
- (9) Is the generalization part of a theoretical system from which it could be deducted as well as being verified by the proposed empirical induction?

[10]. Is the empirical system that is constructed sufficiently precise and articulate to permit predictions in concrete situations (Bales, 1950)?

According to Wimmer and Dominick (1987), to determine the statistical significance of a research study, the researcher must set a probability level, or significance level, against which the null hypothesis can be tested. If the results of the study indicate a probability lower than this level, the researcher can reject the null hypothesis. If the research outcome has a high probability, the researcher must support the null hypothesis. In reality, since the null hypothesis is not generally stated, acceptance and rejection apply to the research hypothesis, not to the null hypothesis.

The probability level is expressed by a lowercase letter p (indicating probability), followed by a "less than" or "less than or equal to" sign and then a value. For example, " $p < .01$ " means that the null hypothesis is being tested at the .01 level of significance and that the results will be considered statistically significant if the probability is equal to or lower than this level. A .05 level of significance indicates that the researcher has a 5% chance of making a wrong decision about rejecting the null hypothesis or accepting the research hypothesis. Note that establishing a level of significance depends on the amount of error researchers are willing to accept in addition to other factors peculiar to the particular research study. For MORE ON HYPOTHESIS TESTING see Wimmer and Dominick (1987); Asika (1991); Babbie (1986); Kerlinger (1973); Bales (1950); Roscoe (1975);

Cohen (1969); Turkey (1962).

QUESTIONS FOR REVIEW

- (1) How relevant is concept in research?
- (2) Discuss the relevance of variables in communication research?
- (3) Do you prefer quantitative research to qualitative research?
- (4) Place the level of measurement each of the following belongs: (1) VHF Channel 1-2 (2) Basketball team standings (3) The finishing order in a 100 meters' athletic race (4) The positions of Ten students in a classroom exercise in which each of the student occupies positions 1-10.
- (5) Identify and examine two commonly used scales in mass media research?
- (6) Differentiate between research questions and research hypotheses?

CHAPTER 3

COMMUNICATION RESEARCH

INTRODUCTION

The systematic study of communication can be traced through the creative work of three great scholars: (1) Harold Dwight Lasswell (2) Paul Felix Lazarsfeld and (3) Wilbur Lang Schram. According to Daniel Lerner and Lyle in Nelson (1977), "the story of communication research begins with the publication in 1927 of Lasswell's *Propaganda Technique in the World War*". This pioneering book was the first to set out the theoretical framework of communication research that was to be elaborated and applied over several decades. The book set forth the paradigm: "who says what, to whom, through which channels, with what effects". Lasswell's collation of propaganda themes foreshadowed his latter invention of content analysis. Similarly, Lasswell's differentiation of propaganda audiences provided the framework for subsequent audience research.

Lazarsfeld was a methodologist of unequal qualities. He turned his fertile imagination to the problems that arise whenever two or more people try to communicate with each other. Lazarsfeld used the Bureau of Applied Social Research at Colombia University to initiate studies of every field in which communication occurs. No experience was too specialised or too insignificant to escape his methodological penetration. He studied every field of human

interactions, from daytime reveries of a housewife listening to soap operas to the professional codes underlying relations between doctors and their patients.

Wilbur Lang Schram built on the work of theorist, Lasswell and methodologist, Lazarsfeld to become the principal researcher of the field of communication. No aspect of communication escaped his scrutiny. From psychological warfare, communication in/for development, effects of television on children, use of audiovisual media and programme instruction in schools and also responsibilities of communicator etc. Schram achieved what other researchers before him could not achieve. He was a theorist, a methodologist as well as a researcher of repute. As an organizer of the systematic research effort, Schram organized three of the greatest institutes of communication research in the United States. These institutes were established at: (1) The University of Illinois (2) Stanford University and (3) East-west center in Hawaii.

COMMUNICATION RESEARCH DEFINED AND CLASSIFIED

Communication research is the application of the scientific method to the study of the process and effects of communication. Like all research, it flows strongly at hunches, conjectures and unsystematic method of arriving at conclusions and unprocedural writing of reports.

Communication research can be classified using some criteria. These are:

- (1) Types of communication
- (2) Elements of communication (a) General (b) Specific
- (3) Professions of communication (mass)
- (4) Process and activities in communication
- (5) Effects of communication.

Types of communication: These include:

- (1) Intrapersonal communication
- (2) Interpersonal communication
- (3) Group communication
- (4) Organizational communication
- (5) Institutional communication
- (6) Public communication
- (7) Mass communication
- (8) Social communication

Elements of communication: (General): These are the various elements in communication (mass). They include: source, encoding, message, channel, decoding, receiver, feedback, effects, noise and environment.

Elements of communication (specific) are: newspapers, magazines, books, radio, television, internet etc. In essence, research can be done in the mentioned areas.

Professional of mass communication are areas of specializations within mass communication. They include: Journalism (Print and electronic), advertising, public relations, book publishing, films and cinematography.

Process and Activities in communication: There are basically two major activities in communication. These are: (1) Encoding and (2) Decoding. Encoding involves talking and writing, while decoding involves listening and reading. These two activities permeate communication. Thus, if you are not encoding, you are decoding and vice-versa in communication science.

Effect of Communication: These are impacts of communication messages. The impacts could be direct, indirect and selective. Effect implies observable and measurable impacts on the audience. Effects could be positive, negative, neutral. It may be

referred to as functional, or dysfunctional. Effects of mass media messages are an area in communication that is heavily researched. Theories of mass media effects include:

- (1) Direct effect theories Hypodermic needle
- (2) Indirect effect theories Two step flow
- (3) Priority effects theories Agenda setting, status conferral
- (4) Functional Uses and gratifications

LOCATING COMMUNICATION RESEARCH

Let us do an exercise of locating mass communication research problems in the table below. Note that each of the five areas of classifying communication research are interwoven, i.e. you may be doing a research which preponderantly falls under professions of mass communication but which has effects of communication inherent in the topic and vice versa. For instance, a communication topic such as: "the impacts of public relations in organization building" is more of a research in effects than in professions. Similarly, a topic such as: "the role of television on children's behaviour" is more of elements of communication (specific) than effects. A topic such as: "newspaper readership habit of Olabisi Onabanjo University mass communication students is a research in type of communication, elements, process and activities in communication (Decoding). A topic such as: "the role of humor in commercials" is a study in professional (advertising), types of communication (mass communication) and effects of communication (functional or dysfunctional) etc.

Now the exercise (**Table 3.0**): Answer the questions by filling-in the number in which the given research problems can be located. An example is given.

Elements Types	Source	Message	Channel	Receiver	Effects
Intrapersonal	1	2	3	4	5
Interpersonal	6	7	8	9	10
Group	11	12	13	14	15
Organization	16	17	18	19	20
Public	21	22	23	24	25
Mass	26	27	28	29	30

A cursory look at the table shows that if you did a study on the mistakes made by the electronic media (TV and radio) in their medium, you would locate it in cell 27. This is because, the study is on message and it is mass communication.

- (1) If you did a study on the political rally's impact on the people. You will locate it where?.....
- (2) The effects on tobacco advertisement warning on the people. You will locate it where?.....
- (3) The effects of tobacco advertisement warning on smokers. You will locate it where?.....

Classification of communication research into professions can also be done.

Elements Effects Professions	Source	Message	Channel	Receiver
Journalism	1	2	3	4
B/casting	6	7	8	9
Advert	11	12	13	14
PR	16	17	18	19
F/making	21	22	23	24
B/publishing	26	27	28	29
				30

If you did a research on the temperament of the people of Ago-Iwoye about Olabisi Onabanjo University (OOU) consequent upon how the University resolved students uprising. You will locate in cell 19. This is because, the study is on the receivers and it concerns the PR of OOU.

- (1) A research work on type of books women read most can be located where?.....
- (2) How OGTV decide what should be the headline in news broadcast?.....
- (3) Perceptions of public relations practice by Nigerians can be located where?.....
- (4) The impacts of Advertising on the economy can be located where?.....

COMMUNICATION RESEARCH IN NIGERIA

It is a fact that communication and by extension, mass communication has not fully grown in Nigeria. Perhaps, the main cause of this can be found in the policies of successive government which, to say the least, have not been beneficial to the growth of the various facets of mass communication. It will be recalled that our communication policy was designed about three decades ago. But the question one should ask is, what positive impacts have these communication policies have on the growth of communication/mass communication in Nigeria? Your answer is as "good" as mine, NONE.

This area of endeavor (communication/mass communication research) is pivotal to man. The fact that communication is the great relating tool which relates individuals to each other, making it possible for groups to function and for the society to live harmoniously cannot be denied. That communication is the soul or essence of life cannot just be whisked away.

Nevertheless, some of the factors militating against the growth of

communication/mass communication research in Nigeria include:

- (1) First generation of communication/mass communication men were not sufficiently educated and could not appreciate the value of communication/mass communication research.
- (2) Lack of coherent national communication policies.
- (3) Lack of understanding of the role of communication/mass communication research to nation building.
- (4) Lack of funds either from the government, foundations, or even individuals.
- (5) Morbid fear by communication/mass communication students on how to go about research.
- (6) Research is a complex exercise. These complexities of research is not helped by teachers i.e. communication research teachers have not simplified the teaching of research and this has led to number 5 earlier mentioned.
- (7) Lack of interest by media houses to embark on research except as it concerns their daily routine of gathering and reporting.
- (8) High level of illiteracy among the populace on what research is, this has led to apathy on the significance of research.
- (9) Lack of proper understanding of the methods to use in communication/mass communication research. This has led to situation whereby an area such as "effectiveness of advertising campaign", many researchers prefer survey method instead of experimentation which is a better method, since sales is not the only indicator of a successful advertising campaigns.

QUESTIONS FOR REVIEW

- (1) What do you understand by communication research?

- (2) Classify communication/mass communication research using FOUR criteria of your choice?

- (3) The growth of communication/mass communication research is slow in Nigeria. Identify factors
- (4) Discuss briefly the role of Harold Lasswell, Paul Lazarsfeld and Wilbur Schram in the systematic study of communication research?

CHAPTER 4

SAMPLING

SAMPLING DEFINED

Sampling is the act, process or technique of selecting a suitable sample; while a sample is a subject of the population that is taken to be representative of the entire population. An important word in this definition is **REPRESENTATIVE**. A sample that is not representative of the population regardless of its size is inadequate for testing purposes: the result cannot be generalized.

Sobowale (1983) said that sampling is done in order that the researcher may take some elements, subjects or respondents in the population to represent that population. He continued that because it is impossible for us all to be in government at the same time and because the business of governance must go on, we elect some people to represent us in the government. He emphasized that for the period those elected represent us in government, we surrender to them our rights and privileges. Sobowale stressed that for the same reason that all of us cannot be in government, any time there is an issue of public interest on which a social scientist wants members of the public to comment, he must select some people to represent that public because trying to obtain the views of all members of the public is almost an impossible task. Besides, the problems that will be encountered are many. They include:

- (1) The information is likely to be too much for the researcher.

- (2) He is unlikely to have the time required to interview all the people individually since his research work cannot be timeless.

- (3) Interviewing every one in the population will be expensive.

However, it is imperative that the sample must be such that can adequately reflect the opinions and attitudes of a cross section of the population. The process of examining every member of a population is called **CENSUS**. Note that theoretically when an entire population is studied, measurement error will be present i.e. inconsistencies produced by the instrument used. But when a sample is drawn from the population, the procedure produces the likelihood of sampling error, i.e. the degree to which measurements of the subjects selected differ from those of the population as a whole.

When drawing a sample, it is necessary the researcher be cautious, as it is easy to choose a ~~wrong sample~~, or to include a wrong sample in the study. Some of the factors researchers should take into consideration include:

- (1) **The definition of the population of study** i.e. the researcher should clearly state what characteristics should define the elements or subjects that should be included in the population. This is necessary in order to avoid the inclusion of wrong elements or subjects.
- (2) **Sampling frame**: This is a complete list of members in the population. It is important for the researching to clearly state this as it could affect the degree of accuracy of this study.
- (3) **Type of sample to be drawn**. The type of sample to be drawn guides the researcher in the selection of method of sampling. Here, the researcher is concerned with either to use probability sample or non-probability sample.
- (4) **Parameters of interest**. Population parameters are

attributes which are to be measured in the population; these attributes are subjected to series of statistical and non-statistical analyses. As of fact, sampling is done to enable researchers closely observe and critically examine these attributes of interest. Thus it is a necessity that researcher clearly define the attributes of interest in the sample and population.

POPULATION SAMPLE

Generally, there are two types of sample. These are: (1) probability sample (2) non-probability sample. Probability sample are samples selected according to mathematical guidelines. It is a sample whereby the chance for selection of each unit is known. Non-probability sample does not follow mathematical guidelines. While probability sample allows researchers to calculate the amount of sampling error present in a study, non-probability sample does not.

According to Wimmer and Dominick (1987), in deciding whether to use probability or non-probability sample, researchers should consider the followings:

- (1) **Costs versus value** i.e. the sample should produce the greatest value at least cost. If the cost of a probability sample is too high relative to the type and quality of information collected, a non-probability sample is a possible alternative.
- (2) **Time constraints:** Since probability sample is often time consuming, a non-probability sample can provide temporary relief, because researchers operate under time constraints.
- (3) **Purpose of the study:** A non-probability sample is often appropriate in some situation such as when research studies are not designed for generalization to the population but to investigate variable relationship or to

collect exploratory data for designing questions or measuring instrument.

- (4) **Amount of error allowed.** In studies where error control is not a major concern, a non-probability sample is usually adequate e.g. in pilot studies.

TYPES OF PROBABILITY SAMPLE

Types of probability sample include:

- (1) Simple random sample
- (2) Systematic sample
- (3) Stratified sample
- (4) Cluster sample

Simple random simple: This is the most widely used probability sampling method. This method gives equal chance to every subject or unit in the population for being selected. It is often used when the sample to be taken is small and employed most often in raffle draws and game shows. Random sampling uses the principle of randomization, which is simply a procedure of giving every subject in a population an equal chance of appearing in the selection. Simple random sample is done by one of these two methods:

- (1) Writing of names, numbers or whatever information the researcher wants to use to identify each unit or subject on papers. These papers are dropped in a ballot box and rolled. Chosen people or persons will then be asked to pick the papers one by one until the required numbers have been picked. This approach is done in two ways, (1) with replacement (2) without replacement. With replacement mean that the chosen or picked paper is returned into the population so that it has another chance of being chosen repeatedly. It is often used in complicated research studies e.g. a nationwide survey. However, this method is fraught with the problem of duplication. But

where the selected sample is one element within its category, it guarantees an equal opportunity of selection to all the elements. Simple random sampling without replacement is a method where once a unit of the sample has been chosen/selected or drawn from the population; it is removed from subsequent selection. This is the more used random sampling method.

- (2) The second method is the use of a table of random number. Here, researchers use a table of random numbers to generate a simple random sample. According to Wimmer and Dominick (1987), for example, a researcher who wants to analyse 10 prime time television programs out of a total population of 100 programs to determine how the medium portrays elderly people can take a random sample from the 100 programs by numbering each show from 00 to 99 and then selecting 10 numbers from a table of random number. Note that a starting in the table is selected at random. There is no specific way to choose a starting point; it is an arbitrary decision. The researcher then selects the remaining nine numbers by going up, down, left or right on the table or even randomly throughout the table.

Simple random sampling method has the following advantages: [1] Detailed knowledge of the population is not required, [2] External validity may be statistically inferred, [3] A representative group is easily obtained, [4] The possibility of classification of error is eliminated. The disadvantages of the method are: [1] A list of the population must be compiled, [2] A representative sample may not result in all cases [3] Sampling error tends to be high compared to other sampling procedure and [4] The procedure is expensive because several steps are involved.

Systematic sample: This sampling method is otherwise called

sampling with a random start. It is arrived at this way. You arrange all the elements of a population and choose every NTH one from the serially listed population subjects or units. Note that the N is any number usually determined by dividing the population by the required sample size. For instance, if you want to interview 100 people from a population of 1,000, you will select every tenth name beginning with a random start. Samples selected from votes' registration exercise or association membership lists are often selected this way. It is usually less time consuming than simple random sample. However, any researcher using it must watch for patterns in the list that could bias the sample.

Systematic sample is often used in mass communication research. It saves time, resources and effort compared with simple random samples. Note that the degree of accuracy of this design is a function of the accuracy of the sampling frame. The procedure for systematic sample is thus, suppose in a population of 1,000 subjects, you want to select 20 subjects.

- Step 1: Number the subjects serially from 1 to 1,000
Step 2: Divide 1,000 by 20 equal to 50.
Step 3: Randomly selects a starting point 50 on the list.
Step 4: Select every 50th unit after the first. This list will include 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950 and 1000.

Before deciding to use systematic sample, the researcher should consider the purpose of study as well as the availability of a comprehensive list of the population. If such a list is not available, it is advisable not to use systematic sample. This design has these advantages: [1] Selection is easy, [2] Selection can be more accurate than in simple random, [3] The procedure is generally inexpensive. The disadvantages include: (1) A complete list of the population must be obtained (2) Periodicity may bias the process. Periodicity is the order of the items in the

population list and this may bias the selection process.

Stratified Sample: This design is used when a researcher is interested in a particular characteristics segment or stratum of the population. Instead of selecting segment or stratum of the population, the researcher identifies a significant variable, selects subjects who have these traits and chooses a sub sample from this group. The variables of interest might be sex, education, age, religion, place of abode, income, social strata, political affiliation etc. The more variables added to the stratification list, the harder it becomes to identify subjects meeting the criteria. Stratified sample ensures that a sample is drawn from a homogenous subset of the population. Homogeneity helps researchers to reduce sampling error.

Advantages of stratified sample include: [1] Representation of relevant variable is ensured, [2] Comparison can be made to other populations, [3] Selection is made from a homogenous group, [4] Sampling error is reduced. The disadvantages of stratified sample are: (1) Knowledge of the population prior to selection is required, (2) The procedure can be costly and time consuming, (3) It can be difficult to find a sample if incidence is low. Incidence is a term used to describe the frequency with which desired subjects can be found in the population. An example of stratified sample is a research study on "Newspaper readership habit of Nigerians" in which the researcher used education to stratify the population. The researcher will further breakdown education into primary school, secondary school, OND/NCE, HND/B.Sc./B.A., M. A/ M.SC etc. An attempt at solving the problems of stratified sample, particularly, the problem of obtaining a complete list of the population, emerged, cluster sample.

Cluster Sample: Cluster sample is selection of samples in groups or categories, e.g. analyzing newspaper readership habits

of people in Lagos state would be time consuming and complicated if individual subjects were randomly selected. But with Cluster sample, the state can be divided into local government, divisions and areas and the selections done. Cluster sampling is used when researcher recognizes that some populations are distributed in pockets of settlement and the researcher want to use the cluster as basis for selection. If the sub-population represented by each cluster is known, this can be used as a basis for proportional selection of samples i.e. the number of subjects selected from each cluster will represent its share of the entire population. Cluster sampling creates two types of errors: [1] Error involved in defining the initial cluster, [2] Error in selecting from the clusters.

In the words of Wimmer and Dominick (1987), "to help control these errors, it is best to use small clusters, both to decrease the number of elements in each cluster and to maximize the number of clusters selected". Cluster sampling also makes use of random sampling to select the subjects from each cluster. The merits of this sampling design include: [1] Only a part of the population need be enumerated, [2] Costs are reduced if clusters are well defined, [3] Estimates of cluster parameters are made and compared to the population. The demerits are: (1) Likelihood of sampling error, (2) Clusters may not be representative of the population, (3) Each subject or unit must be assigned to a specific cluster.

TYPES OF NON-PROBABILITY SAMPLE

Non-probability sample generally do not follow mathematical procedure and there is no equal chance for each unit or subject in the population for being selected unlike probability sample. The types of non-probability samples include:

- (1) Available sample
- (2) Volunteer sample

- (3) Purposive sample
- (4) Quota sample
- (5) Haphazard sample.

Available Sample: is a collection of readily accessible subjects for a study e.g. students enrolled in research course. This sampling method has been criticized for lacking external validity, i.e. it does not represent the population. However, it has been found useful in collecting exploratory information, protesting questionnaire or doing a pilot study. Available sampling often helps eliminate potential problems in research procedures, testing and methodology before the final research is attempted. However, proponents of available sample procedure like Raj (1972) said that the issue of external validity is baseless because if a phenomenon, characteristics or traits does exist, it should exist in any sample. As sound as Raj arguments may be, it should be stated that the issue of external validity is a recurring phenomenon in research and should be taken seriously. Nonetheless, before using available sampling, researchers should consider both the positive and negative effects. An example of available sampling design is using mass communication students taking introduction to mass communication research as a sample for a study.

Volunteer Sample: This is a sample that willingly participates in research projects i.e. samples not selected by mathematical procedures. Rosenthal and Rosnow (1969) said that volunteer sampling can be significantly bias and may lead to inaccurate estimates of various population parameters. Also, volunteer samples may more often than not provide data to support a researcher's hypothesis. Available evidence has shown that volunteer samples are more sociable, more arousal seeking, have more education, have higher occupational status and have higher intelligence, less authoritarian etc. Due to these aforementioned characteristics, volunteer samples can bias the results of a study.

Present in volunteer sampling design is an unknown quantity of error. Volunteer sampling can be useful when comparing tests of products or services. For example, when your friends ask you to give them your questionnaires, it is volunteer sampling. The key thing there is that they willingly ask for your questionnaires even though, they are not qualified to fill the questionnaire or they are simply out of your population or your sampling frame.

Purposive Sample: Sample selected on the basis of specific characteristics or qualities and elimination of those who fail to meet these criteria. Purposive sample is deliberately chosen and it attempts to represent a specific portion of the population and not all and sundry. For example, it is purposive if you embark on a study of primary school teachers in Ogun state and you (researcher) decide to go to certain schools close-by to interview the teachers. It is also purposive when you decide that 55 percent of your samples will be males. Purposive sampling is based on your judgment that is why it is also known as judgmental sampling. When you decide to use certain age bracket in your study, it is purposive.

Quota Sample: This sampling design addresses the issue of representativeness. It begins with a matrix describing the characteristics of the population, i.e. the researcher needs to know what proportion of the population is male, what proportion is female; what proportion for each sex falls into various age groups, ethnic groups, educational levels, income, etc. Considering the heterogeneity of the population, it will be inconceivable to draw the entire sample from one group unless the study is restricted to that group of the population. The researcher then finds the proportion each of the group represents in the entire populations and apportioned samples accordingly. For instance, if adult male is 20 percent, adult female is 30%, children generally is 50 percent. It means that the researcher will use the relative strength or the proportion of each group to arrive

at the samples he will use in his study. Quota sampling has the semblance of probability sample, but is not probability sample for the reason that it is judgmental (purposive) i.e. the researcher takes decision on how to arrive at his sample. For instance, a researcher interested in finding out how Black and White television owners differ in their use of television from coloured television owners may know that 60 percent of the populations own a coloured television and thus select his samples this way: 40 percent black and white television owners and 60 percent coloured television owners. Quota sampling has several inherent problems: [1] The quota frame must be accurate and it is often difficult to get-up-to-date information for this purpose and [2] Like all non-probability samples, biases may exist in the selection of sample elements even though its proportion of the population is accurately estimated.

Haphazard Sample: Is a non-probability design in which subjects are selected on the basis of appearance or convenience, or because they meet certain criteria such as: education, place of abode, income, political affiliation. Haphazard sampling involves researchers' subjectivity. This design gives the impression of probability sample, but it is not. For instance, it is haphazard sampling to interview every 6th person who walks by a designated location.

OTHER SAMPLING TECHNIQUES

The three sampling techniques discussed below are variant of either probability or non-probability design. This is because they all have semblance of one of the two major sampling designs. The techniques are: [1] Multistage sampling design, [2] Panel studies, [3] Double sampling.

Multistage Sampling: Is a complex sampling procedure which involves different levels of clustering before the actual sampling

is done. This design is good where a reliable sampling frame is not available. Multistage sampling is simply sampling in stages. For examples, a researcher doing a nationwide survey may cluster the nation into geographical zones e.g. North, East, West and South and from each zone, further stratified into states and from states, to local governments, to streets, household etc. Note that probability sampling and or non-probability sampling may be used at any of the stages. For instance, at the last stage of choosing streets, the researcher may resort to convenience sampling or systematic sampling.

Panel Studies: The measurement/sampling of the same sample of respondents at different points in time is panel-sampling design. This suggests a kind of permanence i.e. the same samples are used repeatedly for successive interviews. The method of selecting a panel is either purposive or quota, but not any of the method of probability sampling. This is because; there is a deliberate attempt to screen individuals who are interested. Panel sampling is commonly used when producers of products want to test whether their products will be accepted or not. In such cases, they make use of consumers of such product category only. Note that panel sampling is more of a procedure than a method of sampling. For further reading, see Wimmer and Dominick [1987 and 2002].

Double Sampling: This is a modified version of multi stage sampling. However, it has a little difference in terms of objective. While multi stage sampling aims at ensuring representatives in a complex population, double sampling aims at a high level of precision through sampling intensity. The idea behind double sampling is to guide against attrition i.e. situation whereby sample size decreases. To guide against attrition, the researcher uses any of the sampling methods earlier discussed to choose a sample size larger than the size he actually needs. And from this extra-large sample, he chooses the actual sample size by applying

any of the sampling methods earlier discussed.

SAMPLE SIZE

One of the most controversial aspects of sampling is the determination of an adequate sample size. The question has always been: how large must a sample be to be representative of the population or to provide the desired level of confidence. There is no simple answer to this question because there are various statistical procedures and also, no single sample size formula is available for every research method. There are general principles that guide researchers in determining an acceptable sample size. These principles are:

- (1) **Methodology to be used.** If your methodology is survey, you need a bigger sample size than in focus group or in panel studies where 8-14 sample size may be okay. Also, where the purpose is to pretest your instrument, you need a small sample size.
- (2) **Cost and time.** No research study is timeless, just as none is without one expense or the other. If using a large sample may be too expensive and time consuming, a small sample may be used. In fact, cost and time have a great influence on research projects. Generally, the rule is to consider the cost of sample and time involved before embarking on research. Albeit, if a small sample size is forced on the researcher, the results must be interpreted appropriately, especially as regards generalization.
- (3) **Attrition.** It is estimated that subjects may drop out of research studies for one reason or another. So allowance must be made for this drop in planning the sample. Attrition is common in panel studies.
- (3) Consulting the works of other researchers can provide a base from which to start.
- (4) It is important to remember that multivariate studies (study in which several variables are being tested) always

require larger sample than univariate studies (study in which only two variables are being tested). In the words of Wimmer and Dominick (1987) "one guideline recommended for multivariate studies is 50 = very poor, 100 = poor; 200 fair; 300 = good; 500 = very good; 1000 = excellent.

(5) Note that the larger the sample used the better. Also, a large unrepresentative sample is as meaningless as a small representative small. Researchers should not consider quantity alone; quality of the sample is more important than quantity.

SAMPLING ERROR

To understand the idea of sampling error, let us first look at an example that has no sampling error. For instance, if the population you want to study is all the students in your class. Assume there are 100 students in your class. You ask everyone, will you vote in the next general elections in Nigeria? By this, you will discover the population parameter i.e. the percentage who will vote and those who will not vote. Suppose 60 percent said they will vote and 40 percent said they will not vote. Because, you ask everyone the question and everyone responded there is no sampling error. But the moment you sample i.e. sampling error creeps in.

Sampling Error: is the degree to which measurement obtained from a sample differs from the measurement that would be obtained from the population. Because a sample does not provide the exact data a population would, the potential error must be taken into account. There are many areas of research in which errors could creep in. Besides, research error is an additive process. It is a total error which comprises (1) Sampling error (2) Measurement error (3) Random (uncontrollable error) error. It is a certainty that as a result of imperfections here and there during

questionnaire design, sampling, introduction/problem statement, data gathering, data processing, data interpretation, report writing etc, some bias or uncalled for factors will occur that will render behavioral research findings sometimes inaccurate. So having accepted errors as a research fact, researchers could tell us by how much they could be away from the truth.

Sampling error is only one of eight types of potential error that can influence research results.

The other seven types of errors are:

(1) **Surrogate information error** - variation between the information required to solve problem and information sought by the researcher. A good example is the so called price-quality relationship where the price of a product is used to represent its quality.

(2) **Measurement error** variation between the information sought by the researcher and the information produced by the measurement process.

A good example is when respondents tell lies of their age, income etc. Measurement error is one of the most common and serious errors. It is difficult to control because it can arise from many different sources and it negatively affects result of studies.

(3) **Experimental error** variation between the actual impact of the independent variable(s) and the impact attributed to the independent variable(s). This type of error occurs when the effect of the experimental situation itself is measured rather than the effect of the independent variable. An example is thus: in an attempt to discover the best pricing strategy, a company can sell her particular product at a higher price in southern states and at lower price in northern states. However, the company may have overlooked weather patterns, income level, level of

affluence, literacy level, competitor's activities etc. that may affect the sales of her products. Thus the experimental results will reflect the impact of variables other than price.

(4) **Population specification error** Variation between populations required to solve a problem and the population selected by the researcher. An example is a study on the effects of tobacco advertisement warning on smokers in which the researcher used non-smokers as subjects of study.

(5) **Frame error** Variation between the population as defined by the researcher and the list of population members used by the researcher. An ideal frame identifies each member of the population once and only once. Frame error is caused by using an inaccurate or incomplete sampling frame. For instance, using the telephone directory as a sampling frame for the population of a community contains a potential for frame error particularly in the developing countries where many homes do not have telephone. Sometimes too, some homes have telephone, but do not have their number listed in the directory.

(6) **Selection error** Variation between a representative sample and the sample obtained by using a non probability sampling method i.e. that the sample is not representative enough or at all.

(7) **Non-response error** variation between the selected and the sample that actually participates in the study. This type of error is caused by (1) Failure to contact all members of a sample, (2) The failure of some contacted members of the sample to respond to all or specific parts of the measurement instrument. Once good way to overcome non-response error is to adopt double sampling

discussed earlier, also make your research topics as interesting as possible.

CALCULATION SAMPLING ERROR

There are several ways to calculate sampling error. However, no single method is appropriate for all situations. Besides, error formulas vary in complexity. The commonly used formula for calculating sampling error is thus:

EQ

P is the probability of being right and Q the probability of being wrong N is the sample size i.e. number of persons interviewed. Social scientists assume as a routine that PQ is always .25 i.e. .5 multiply by .5. The equation is written this way: $\frac{.25}{\sqrt{N}}$

Assume that 100 persons were interviewed (sample size). The equation becomes:

$$\frac{.25}{\sqrt{100}} = \frac{.25}{10} = 0.025 = 2.5\%$$

Therefore, the sampling error would be 2.5%. Assuming a researcher conducts a poll and discovered that candidate A would likely score 50 percent of votes cast and candidate's B 40 percent with 10 percent undecided voters. The researcher would report his findings thus. Candidate A would likely score 50% of votes cast and candidate B 40% with 2.5% point more or less i.e. each of the candidate score may be less or more by 2.5%. This mean that candidate A could either score 52.5% or 47.5% and candidate B 42.5% or 37.5%.

Two factors usually influence sampling error. They are: (1) Sample size (2) Degree of difference between elements in the population.

- (1) **Sample size** The larger the sample size, the smaller the sampling error, the bell curve would get taller in the middle and shorter at the end as the sample size increases.

However, sampling error decreases at a slower rate as the sample size increases (figure 4.1). Although, doubling a sample of 100 results in a large drop in sampling error, doubling a sample of 1000 results in a very small drop. Thus, for this reason, public opinion pollster usually always not more than 1,500 to 1,600 people. To interview more merely increases the cost of the project, it does not appreciably reduce the sampling error. Sampling error is always present in a study and it is only when the number sampled represents about 5 percent or more of the population does the size of the sample begin to have impact on sampling error.

- (2) The degree of difference between elements in the population is another factor affecting sampling error. Error is greatest when two categories are evenly split i.e. 50 to 50 and lowest when there is a wide disparity, say 80 to 20%.

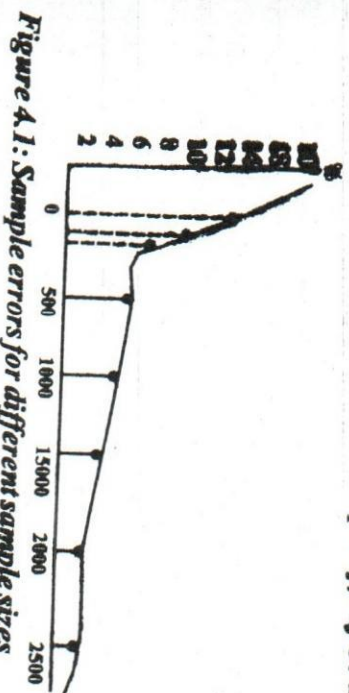


Figure 4.1: Sample errors for different sample sizes

Other factors that must be taken into account each time research findings are to be presented are:

- (1) Confidence level and (2) Confidence interval.

Confidence level. This says that if all possible samples

have been taken, the same findings would have occurred so many times out of 100. For instance, reporting a study at 95 percent confidence level mean that a particular result will occur 95 times out of 100 if all possible samples had been taken. There are three levels of confidence. These are: (1) 68% (2) 95% and (3) 99%. Social scientists often use 95% while 99% is used by physical scientists. 90% confidence level is sometimes used as well. The standard scores for each of these confidence levels are: 90% = 1.65; 95% = 1.96; 99% = 2.58. The confidence level at which data are reported must be indicated in the equation for calculating the sampling error. In essence, if you are reporting at 95% confidence level, you multiply the product of the equation in sampling error by 1.96. It becomes:

$$\frac{25}{\sqrt{N}} \times 1.96$$

e.g. using the example earlier given.

You have

$$\begin{aligned} \frac{25}{\sqrt{100}} \times 1.96 &= \frac{25}{10} \times 1.96 \\ &= 0.025 \times 1.96 \\ &= 0.049 = 4.9\% \\ &= 5\% \end{aligned}$$

In the poll example given earlier of which the sample size is 100. The correct margin at 95% confidence level is 5%. This mean that candidate A could score between 55% and 45% and candidate B between 45% and 35%. If you decide to report at 90% confidence level, the error margin would be:

$$\frac{1.65 \times 25}{10} = 1.65 \times 0.025 = 0.04125$$

Which is equal to 4.1% = 4%. Then candidate A would score between 54% and 46%, while candidate B would score between 44% and 36%. Note that the higher the confidence level, the

smaller the error margin. At 99%, it is 1%; at 95% it is 5%; at 90% it is 10% and at 68% it is 32%. However, social scientists hardly ever report at 99% and 68% confidence levels.

Confidence interval. This is known after the error margin has been calculated. It is the interval between the highest possible score and the lowest possible score. In the poll example, using 95% confidence level A's possible victory is 55% and 45%. When the votes are cast, if candidate A score anything between 55% and 45%, then, the researchers' prediction would be said to be correct, similarly for B. In all, error is an important concept in research because it provides an indication of the degree of accuracy of research work. Researchers must pay specific attention to the potential sources of error in any study. Producing a study riddled with error is tantamount to never having conducted the study at all. If the magnitudes of errors are subjected to accurate assessment, researchers could determine the source of error and correct it. However, because it is not possible, researchers must accept error as part of the research process, attempt to reduce the effects to the minimum and remember to always interpret their results with regard to its presence.

QUESTIONS FOR REVIEW

- (1) Why sampling in research?
- (2) Enumerate the **TWO** major ways to draw a sample and examine their pros and cons?
- (3) Stratified sampling is better than systematic sampling. Discuss?
- (4) Discuss at least **FOUR** determinants of sample sizes?
- (5) Research error is additive. Do you agree?
- (6) Mention and examine **FOUR** types of errors in research?
- (7) Calculate the sampling error in a study in which the sample size is 900. Use 95% confidence level?
- (8) There are other sampling methods aside the **TWO** major ones. List the **TWO** of them and critically examine them?

CHAPTER 5

SURVEY, EXPERIMENTATION, CASE STUDY METHODS AND INDEPTH INTERVIEW METHOD

SURVEY RESEARCH METHOD

Survey research method **scientifically** sampled and interview people to analyse and report what they said. According to Sobowale (1983), "the survey technique is the most commonly used research method by behavioural scientists". **The strength of this involves drawing up a set of questions on various subjects or on various aspects of a subject to which selected members of a population are requested to react. Surveys are now used in all areas of life from business, consumer groups, politics, economics, advertising, public relations etc. The importance of survey research is confirmed by the frequent reporting of survey research results in the popular media. This is particularly evident during electioneering when we continually read or hear about polls conducted to ascertain candidates' positions with the electorates.**

The increasing use of survey research method has created changes in the way surveys are conducted and reported. Today, more attention is given to sample selection, questionnaire design, error rates and **sampling error**. The **FOUR** major activities in survey research methodology are: [1] Sampling of subjects, [2] Interviewing of subjects, [3] Processing and analyzing information collected from subjects, [4] Reporting information

collected from subject

Survey research approach, like other research approaches, requires careful planning and execution of plans. Jacqueline P Wiseman and Marcia S Aaron (1970) offer an excellent definition of survey: Survey research is a method for collecting and analyzing social data via highly structured and often very detailed interviews or questionnaires in order to obtain information from large numbers of respondents presumed to be representative of a specific population.

While there is no controversy that the crux of survey is interviewing, a cursory look at the etymology of the word survey is suggestive of the meaning, which is, "to view or study as a whole". The word "survey" has two origins: (1) Middle French, "Surveir", from sur+veir, meaning, "to see". (2) Latin, "videre", which also mean, "to see". Nonetheless, the description of survey by Wiseman and Aaron (1970) calls attention to **FOUR** key points: [1] Survey is done to collect and analyses social economic, psychological, technical, cultural and other types of data. [2] It is based on interviewing of people (respondents) and asking them for information. [3] It is done with representative samples of a population being studied. [4] It is assumed that information obtained from the sample is valid for the general population (Arthur Berger 2000).

KIND OF SURVEYS

There are two basic kinds of surveys: (1) Descriptive and (2) Analytical surveys. Analytical survey is sometimes called exploratory survey (Berger 2000). The **descriptive survey** describes the population being studied. It attempts to obtain demographic information such as age, sex, income, marital status, race, occupation, religion etc and relate this information to psychographic information such as opinions, values, beliefs,

aspirations and behaviours of some groups of people. Descriptive surveys picture or document current conditions or attributes i.e. describe what exist at the moment. Examples of descriptive surveys are census, poll surveys to learn the opinions of the electorate about candidates, surveys to determine programming tastes, changing values and lifestyle variations. Producers also embark on descriptive surveys to determine who uses their products.

Analytical survey This kind of survey seeks to find out why people behave the way they do i.e. to explain why certain situation exist. Analytical surveys attempt to determine whether there are causal relationships between certain kinds of behaviour and various social and demographic cum psychographic characteristics of people. Researchers often use analytical surveys to test their hypotheses about what causes certain kinds of behaviour, while descriptive surveys are used to develop hypotheses. An example is the occasional surveys of the market by producers of products to find out how lifestyles, income level, changing tastes, weather etc. can be used to predict the success of products. Analytical surveys are common in media research, particularly in the broadcast media.

MERITS AND DEMERITS OF SURVEY RESEARCH METHODS

MERITS (1) Surveys are inexpensive compared with the amount of information gathered. Besides, you can control your cost by selecting from four major types of survey mail, telephone, personal interview and group administrations (2) Surveys can obtain current information (3) Large amounts of data can be collected with relative ease from a variety of people. The survey approach enables you to examine many variables like demography, psychograph, life style, and motivation etc. in one study and of course to use multivariate statistics to analyze data.

- (4) Surveys can be used to investigate problems in realistic settings. For instance, newspaper reading, television viewing, consumer behaviour patterns can be examined where they occur rather than in a laboratory or artificially created room or conditions (5) You can contact secondary sources for your survey data because many survey data already exist. The use of secondary sources facilitates and quickens your research work. (6) Surveys provide quantitative data, i.e. survey research generates data that can be quantified and analysed statistically and thus can reach a higher level of precision about the group being studied that other forms of research cannot duplicate.

DEMERITS: Some of the problems associated with survey research methods are: [1] People often do not tell the truth, particularly about personal matters, [2] People make mistakes about what they have done even if they try to tell the truth, [3] Obtaining representative samples is sometimes quite difficult, [4] People often refuse to participate in surveys, [5] Relatively low return rates of questionnaire, [6] The wording of the questions and the arrangement of same can bias the results, [7] Causality is difficult to establish in survey research. In essence, survey may establish that A and B are related, but difficult or impossible to determine solely from the survey that A causes B, i.e. independent variable cannot be manipulated as in laboratory experiments. Without the control of independent variable variation, the researcher cannot be certain whether the relations between independent and dependent variables are causal or not.

METHODS OF DATA COLLECTION IN SURVEY

Generally, survey data are collected through two methods. These are: [1] **Interviews** Individual or group interviews, in person or telephone interviews, [2] **Self-administered questionnaires** Supervised administration (oneto one or group administrations) or unsupervised administration, when the questionnaires are

mailed or e-mailed to people or freely distributed via magazines, the internet, etc. (Arthur Berger 2000). These two approaches are however divided into **FOUR** ways. They are: (1) The mail surveys (2) The telephone, (3) Personal interview survey and (4) Group administration. Researchers can use any one of these approaches or combinations of choice. It is however important that researchers understand the advantages and disadvantages of each one.

MAIL SURVEY

This involves mailing self-administered questionnaires to a sample of individuals. Stamped reply envelopes are enclosed to encourage respondents to mail completed questionnaire back to the researcher. The stages of mail survey include:

- (1) Select a sample This is normally done from a prepared frame that contains the names and addresses of potential respondents. In many cases, the mailing list if available is used. This list is usually collected from the post office.
- (2) Construct the questionnaire. Mail questionnaires must be concise and specific because the interviewer will not be present to explain questions that are fussy.
- (3) Write a cover letter. A brief note explaining the purpose and significance of the questionnaire usually increases response rate.
- (4) Assemble the package, i.e. the questionnaire, cover letter and stamped return envelopes are stuffed into the mailing envelops and neatly packed.
- (5) Mail the surveys
- (6) Closely monitor the return rates
- (7) Send follow-up mailing i.e. sends letters to remind, urge or ask the respondents not to forget to answer the questionnaire and return same. The follow-up letters should be sent two weeks after the initial mailing and if

need be send another one ~~after~~ two weeks of the first one. You can send the follow-up letter to the universe or only to respondents who failed to answer.

(8) Tabulate and analyse the data

MERITS

- (1) It is relatively cheap. The cost you incurred are secretarial expenses and cost of postage which are always marginal.
- (2) Distance the questionnaires can be sent to far places, all that needs done is to affix correct postage stamp.
- (3) Anonymity. Because ~~you are~~ not likely to know the respondents and they are not likely to know you, anonymity is ensured. This will have a positive effect on the way the questionnaires are filled, as well, as on the return rate.
- (4) Faithfulness of responses. Since you are not there when the respondents fill the questionnaire, the possibility of your presence embarrassing or intimidating the respondent is ruled out.

The DEMERITS of mail surveys include:

- (1) Postal problems particularly in the developing countries where the postal services providers are inefficient, for instance, the questionnaire may not reach its destination and it may never get back.
- (2) Undue delay may disturb the research i.e. undue delay in filling questionnaire or undue delay in the postal process.
- (3) Lethargy. Some respondents may feel so unconcerned that they may not bother to answer the questions at all. Where they do, it may take time.
- (4) Insincerity in filling the questionnaire by way of unqualified persons answering the questionnaire or fake responses.
- (5) Poor return rate consequent upon poor postal services of the postal services providers, refusal of respondents to

answer the question etc.

- (6) Incompleteness of responses due to oversight, invasion of privacy etc.

However, despite these problems, some proven measures that could increase response rates are: [1] Keep questions in the questionnaire to a minimum, [2] Use follow-up letters, [3] Include cover letters, [4] Use stamped envelopes, [5] Ask objective and not subjective questions, [6] Address cover letters to individuals by name as opposed to, dear sir, or madam, or dear friend, [7] Have an important person or a prestigious organization sponsor the survey.

TELEPHONE SURVEY

Telephone survey as the name implies is a method of survey conducted through the telephone. This method employs trained members to ask questions verbally and to record same through the telephone. Telephone surveys offer more control and higher response than most surveys, but are limited in the type of questions that can be asked. Due to the complexities in telephone surveys, some recommendations have been made.

- (1) Read the questions as exactly as worded i.e. ask respondents the exact order of the questions as worded.
- (2) Never suggest an answer, try to explain a question or imply what kind of reply is wanted i.e. do not prompt in any way.
- (3) If a question is not understood, say let me read it again and repeat it slowly and clearly. If still not understood, record a no answer and proceed.
- (4) Write answers fully and comments exactly as given if an answer seems vague, probe with neutral questions like, will you explain that? How do you mean? Sometimes waiting a bit will tell the respondents you want more information.

- (5) Never talk up or down to a respondent. Even, an Oh! Can cause a respondent to hesitate or refuse to answer further question. So act interested, be alert and be appreciative of the respondent's cooperation. But do not comment on his replies.

- (6) Whether you agree with the instructions or not your duty is to follow it.

- (7) Leave a good impression for the next interviews i.e. thank each respondent.

Below are the general procedures for conducting a telephone survey:

- (1) Select a sample. Depending on the purpose of the study, researchers must clearly state the geographic areas to be covered and the specific person(s) to interview.
- (2) Construct the questionnaire. Remember to ask straightforward questions. For non-professional, your questioning should not exceed 10 minutes. Longer interviews require people who can keep people on the telephone.
- (3) Interviewers' instructional manual is a necessity. This document should cover the basic mechanics of survey i.e. who to call, when to call, how to record responses etc.
- (4) Train the interviewers, the interviewers must be acquainted with the questionnaire. They must also be trained on how to ask questions
- (5) Collect the data from a central location so as to facilitate monitoring of the interviewers and to correct any problems that may occur or be experienced by the interviewers.
- (6) Make necessary callbacks to respondents whose lines were busy or who did not answer during the first session. It is advisable to make your callbacks on a different day because, this tends to have a greater

chance of success in reaching people who are willing to be interviewed.

(7) Verify the results to ensure that information they provided are accurately recorded. This you do by randomly calling some of the respondents.

(8) Tabulates the data. Besides normal data analysis, telephone researchers generally make some computations. These may be: (1) How many completed the interviews (2) How many did not (3) How many no answers (4) How many disconnects etc.

MERITS (1) The sampling involves minimal expense, no elaborate transportation costs, callbacks are easy and simple (2) Response rate is generally high especially when multiple calls are made. (3) It is fast, easy and relatively cheap. **THE DEMERITS** of this technique include: (1) Questions must be short to avoid respondents hanging-up on the interviewer (2) Problem of not being able to persuade respondents to answer sensitive questions, [3] In the developing countries where telephone services are expensive, telephone surveys any be costly (4) There is also the difficulty of obtaining accurate and updated telephone directory from which a sample of respondents is drawn.

PERSONAL INTERVIEW SURVEY

When the interviewer visits the interviewee at the interviewee's home, place of work etc., it is called personal interview survey technique. Personal interview technique is conducted in two ways: [1] Structured interview (2) Unstructured interview. **Structured interview** allows questions to be asked in a predetermined order with relatively little freedom given to interviewers. Structured question is easy to analyze

and tabulate. However, they do not achieve the depth or expanse of instructed interviews. In **unstructured interview**, broad questions are asked which allows interviewers freedom in determining what further questions to ask to obtain the required information. The unstructured interview format elicits more detail, but takes a great deal of time to score and analyse. Interviewers instructions manual usually accompany instructed interview.

The procedure for conducting personal interview survey includes:

- (1) Select a sample usually a multivariate procedure is used.
- (2) Construct the questionnaire.
- (3) Prepare an interviewers instruction manual which should contain detailed instructions on who to interview, how to act during the interview, how to record data etc.
- (4) Train the interviewers on how to gain access to interviewers, how to establish rapport with subjects, etc.
- (5) Collect the data from the interviewees without stressing them, or without stressing yourselves. On your own part (interviewer) things that could stress you are accommodation, transportation, feeding allowances etc. So make sure all these and others have been resolved before embarking on personal interview technique.
- (6) Verify the results to avoid situation whereby interviewers did not visit where they are supposed to visit. One good way to verify this is to send another person to places claimed to have been visited to ask them questions concerning the

survey.

- (7) Tabulate the data. This is done like the telephone survey for statistical purposes.

MERITS: (1) Completeness of answer (2) High return rate (3) Answer to sensitive questions (4) Gain in time because you go with the questionnaire and you returned with same. (5) Flexible, i.e. the face-to-face situation lends itself to questioning in greater depth and detail. The

DEMERITS of personal interview technique include: [1] Very expensive because transportation and labor costs will be incurred. Most especially where the respondents are spread over a wide geographic area, [2] Callback which should be done at least twice can be expensive too, [3] Patience and tolerance are needed to sail through, [4] The interviewers' presence may bias the responses of the sample. In all, the merits outweigh the demerits

GROUP ADMINISTRATION SURVEY

This kind of survey takes place where a group of respondents are gathered and given individual copies of a questionnaire for self-administration or the respondents may be asked to participate in a group interview. For instance, at the end of film, the audience might be asked to participate in a group interview at which a questionnaire is given to everyone. The questions in the questionnaire may be what part(s) of the film were liked most? How interesting is the storyline? Is the beginning sharp? Is the middle dull or interesting? The ending, is it believable? Etc. In group administration survey, the questionnaires are given to everybody while the interviewer reads the questions in the questionnaire aloud and each respondent's records responses in an answer form supplied. This technique can be very useful where the respondents' level of reading skill is low. Note that in group administration technique other interviewer may be present

in the room where the interview is taking place and that these interviewers do or can provide additional information to respondents with problems.

MERITS: [1] Detailed in approach as the respondents are free to ask questions not clear to them, [2] Response rate is high, [3] Almost 100 percent response to questions in the questionnaire is achieved, [4] Less costly at least compared with face to face or telephone interview. The **DEMERITS** of group administration include: [1] interaction between and among respondents is possible and can negatively affect the result, [2] The possibility of interactions make the situation difficult to control by interviewer, [3] Mixing the respondents can bias the results.

WRITING SURVEY RESEARCH QUESTIONS

Writing survey research questions go beyond mere surface scratching of phenomena being studied. It is an art and therefore must be mastered, else there could arise measurement and surrogate error. [See chapter four for explanation]. Good survey questions have inherent in them the following characteristics [Berger 2000]: [1] They are clear and unambiguous, [2]

They are short, [3] They are simple and easily understood language, [4] They ask for only one piece of information per question, [5] They avoid showing bias, [6] They are not leading questions, [7] They are not loaded questions, [8] They don't embarrass respondents, [9] They ask questions respondents can answer, [10] The questions are logically grouped with questions related to one another being near, [11] The order of questions is logically worked out.

Survey research generally is concerned with **THE WHAT** of issues. This explains why survey research is used to determine the following:

- [1] What do people know? [2] What do people think? [3] What do

people own? [4] What do people do? [5] What have people done? [6] What are people planning to do? [7] What are people's attitudes? [8] What are people's tastes? [9] What are people's beliefs? [10] What are people's values? [11] What are people's prejudices? Etc

STRUCTURE OF QUESTIONS IN SURVEY RESEARCH

There is no must-use or must-avoid type of questions in survey research. The type of questions to use is dependent on the purpose of the study, the topic of research i.e. the phenomenon under study and the know-how of the researcher in question design. For instance, there are some research topics which are on attitudes and perceptions of respondents. Such topics require composite measures, hence, the use of scales and indexes. There are also some topics which are straight and require no scale and indexes e.g. "the practice of public relations in Nigeria", "the impact of advertising on sales" etc.

The structure of questions generally used in survey research include: [1] Open ended questions, [2] Close ended questions, [3] Fill in the gaps questions, [4] Rating scale questions e.g Likert and semantic scale, [5] Rank ordering questions [6] Checklist questions. **Open ended questions.** These are types of questions in which respondents are required to generate their own answers. Open ended questions allow respondents freedom to answer questions the ways they liked. It however gives room for further probing of respondents. Open ended question structure is very useful in pilot study to refine questions in the questionnaire before the actual study. The main drawback of open ended questions is that it requires longer time to collate and analyse. An example of open ended questions structure is:

What do you like to read most in a newspaper?

Close ended questions require respondents to select an answer from a list of answers provided by the researcher. Close ended structure format makes for greater uniformity of responses and it makes the responses easily quantifiable for analysis. The drawback of this structure includes: [1] Likelihood of researchers to include some important responses; respondents do not have the chance to answer questions according to their own beliefs or feelings. Albeit, one commonly used to solve these problems is the inclusion of the option "others" followed by a blank space as one of the response options. An example of close ended question structure is:

What do you like to read most in newspapers?

- [1] News -
- [2] Sports
- [3] Feature articles
- [4] Opinion articles
- [5] Advertisements
- [6] Others

Note that in close ended questions structure, the questions are coded already i.e a numeral is attached to each response category. This no doubt provides an invaluable assistance when researchers are tabulating and analysing the response of each respondents.

Fill in the gaps questions. This question structure is a type in which respondents are asked to fill a space or spaces, kind of space[s] completion in which one or two or more words are deliberately omitted from a sentence. The sentence will only be meaningful when completed. This structure is mostly used in

advertising copy testing. They are used to test respondents' recall of commercial. For instance, after viewing, reading or hearing a commercial message, subjects are given a script of the commercial in which some words have been omitted. Here, subjects are asked to fill in the blank spaces to complete the questions and make all questions meaningful. For example, after hearing Cadbury's Tom Tom Sweet commercial message, respondents could be asked this question:

The big black----- way get -----
 -----na ----- na im be -----

Likert Scale Questions. The two commonly used rating scale questions in mass communication research are: [1] Likert scale and [2] semantic differential scale question. In Likert scale respondents are asked to agree, neutral or disagree with questions or statements. Likert scale questions are always five points scale. For instance, the statement could be:

Nigeria is a pariah state?

- [1] Strongly Agree
- [2] Agree
- [3] Neutral
- [4] Disagree
- [5] Strongly Disagree

Semantic Differential Scale Questions is another form of survey question structure commonly used in mass media research. The question structure is used to rate persons, concepts or objects. It is a bipolar adjectival structured seven points scale. A question or statement is made and the responses are underneath it. Note that the adjectives are rotated i.e. the first adjective used could be positive on the left side, the second positive on the right side, on and on, till the end. Also, some statistical computations are made after the whole questions or statements have been

answered. For instance, the question or statement could be about Olabisi Onabanjo University authority's response to a cult crisis.

With references to the resolution of the secret cult of 1994 the UNILAG authority was:

	-3	-2	-1	0	1	2	3
Efficient	-	-	-	-	-	-	- inefficient
Reliable	-	-	-	-	-	-	- unreliable
Secretive	-	-	-	-	-	-	- open
Unfair	-	-	-	-	-	-	- fair

Rank ordering question. This structure is used when researchers are interested in the relative perception of several concepts or items. Respondents are asked to rank order from most preferred to least preferred. Each of the options is ranked by the respondents from 1 to 10 in most cases. It is never more than 10 (ten) because the ranking can become tedious. For instance, rank the following universities in terms of their popularity. Put a "1" to the most popular, a "2" to the next and a "3" to the next and so on.

_____ UNILAG	_____ UNICAL
_____ OAU	_____ OOU
_____ ABU	_____ UNN
_____ ABIASU	_____ FUTA
_____ BUK	_____ UI

Checklist questions - This structure is often used to refine questions before the actual administering to the actual subjects. The aim is to perfect the instrument used to gather data so as to reduce errors. For instance, the question could be:

What things do you look for in the purchase of an automobile?

- The neatness of the seats

- The efficiency of the break system
- The level of usage of the break system
- The neatness of the body of the car
- The sound of the engine
- Automatic window Automatic gear system
- Whether it is a contact set or brain box
- Whether the car is manual or power steering

The most frequently checked answers are later used to develop a multiple choice question, while the unchecked responses are dropped.

QUESTIONNAIRE DESIGN

The structure of questions, the approach used in asking questions, as well as physical of a questionnaire can positively or negatively affect the response rate. To this end, great care must be put in the way and manner questionnaires are designed. There are five basic requirements of a good questionnaire. These are: [1] Introduction, [2] Instructions, [3] Question order, [4] Layout and [5] Questionnaire length

Introduction. A good way to increase the response rate in any type of survey is to prepare a persuasive introduction. The introduction to a survey questionnaire contains the names of the researcher, or organizations sponsoring the survey; the title of the research; a statement guaranteeing the anonymity of would-be respondents; the purpose of the research among others. According to Backstrom and Hursh-cesar (1981), there are six principles for writing a successful introduction to a questionnaire. These are: (1) The introduction should be short (2) It should be realistically worded i.e. no room for platitudinous expressions (3) It should be nonthreatening (4) should be serious (5) Should be neutral (6) Should be pleasant and firm. Remember that the main function of the introduction is to convince the

would-be respondents that the survey is valuable and will help solve problems theoretical or applied. An example of how to write an introduction is thus:

Dear Sir/Ma /Friends,

I am Leo Anamasonye, a final year student of the Department of Mass Communication, Olabisi Onabanjo University, Ago-Iwoye. I am conducting a research of which the title is: the perception of mathematics by mass communication student of Olabisi Onabanjo University, Awo-Iwoye.

Please, your candid answers are required to the questions in the questionnaire. Note that this exercise is for academic purpose only. Your responses will be treated with utmost confidence. To guarantee your anonymity, do not write your name on the questionnaire.

Thank you.

Instruction. All instructions necessary for the completion of the questionnaire must be clearly stated in the questionnaire. The instructions must be written in bigger typeface different from the questions in the questionnaire or some graphic device, or arrows can be used to point to the fact that the item(s) is/are instructions. Remember that the instruction could be for the respondents or the interviewers.

Question order. Survey questions flow better when the initial questions are simple and easy to answer. This is why researchers include one or two warm up questions not directly related to the study so that respondents become accustomed to the task of answering questions. According to Wimmer and Dominick (1987), it is advisable to place the demographic questions and other sensitive questions toward the end of your questionnaire.

This is to build rapport with your respondents before the actual questions are asked. The questions in the questionnaire should be in logical order; they should precede from the general to the specific. Also, questions that are similar should be grouped together and the transitions between and among grouped questions should be clear, logical and in sequential order. Note that poor questions order may bias the results. To this end, it is advisable for researchers to do a pilot test using a small sample before the actual study is embarked upon.

Layout. The physical appearance of a questionnaire can attract just as it can repel respondents. A badly typed, poorly reproduced questionnaire is not likely to attract respondents. Equally, a questionnaire with several questions cramped on a page will not encourage respondents to fill. To encourage respondents to fill the questionnaire, response categories should be adequately spaced and presented in a manner that is clear, neat and non-confusing. A good way to order the response category to a question is to have them in vertical order. Similarly, there must be enough space in-between response categories and in-between questions. A question in this order might lead to problems.

The economy of Nigeria is superb

Strongly agree _____ (1) Agree
 _____ (2) N e u t r a l
 _____ (3) Disagree _____ (4) Strongly
 disagree

The same question could have been better arranged this way:

The economy of Nigeria is superb

(1) _____ Strongly agree
 (2) _____ Agree

(3) _____ Neutral
 (4) _____ Disagree
 (5) _____ Strongly Disagree

The layout of your questionnaire is very important, so ensure it is neat.

Questionnaire length. This is very important as it can have a discouraging effect on the respondents. A too long questionnaire can lead to gradual loss of interest on the part of the respondents. This loss of interest can lead to respondents telling lies simply to ensure he/she fills the questionnaire. While you should avoid making your questions too lengthy, you must as of necessity ask enough questions that cover the topic under investigation. There are some guidelines concerning questionnaire length, which you must keep-to in designing your questionnaire. These are: (1) Context of questions (2) Cost of designing the questionnaire (3) Limit of the respondents' ability and willingness to answer questions.

The best way to ensure your questionnaire is not lengthy is to conduct a pilot study to check for problems. You could do a pilot study of your questionnaire by using a small sample or even a focus group of 6-12 potential respondents and have them discuss the topics to be investigated. This pretesting can help you make additions or subtractions in/to the questionnaire.

SOME DOS AND DONTS OF WRITING QUESTIONS

- (1) Make questions clear, no room for ambiguities.
- (2) Keep questions short and straight to the point.
- (3) Include complete instructions on how to fill the questionnaire. Aspect that require ticking, marking, circling etc. should be indicated. Those that require ranking etc. should also be indicated.

- (4) Do not ask double-barreled questions i.e. Questions that ask two or more questions at once e.g. "What is your income and where do you live". Note that whenever the word **AND** appear in a question, the sentence structure of the question should be changed.
- (5) Avoid biased words/terms e.g. "where did you read the news of an outbreak of war in the gulf". This question is biased in favour of newspapers and magazine and disfavor radio, television or even interpersonal communication.
- (6) Leading questions are bad i.e. a kind of question that suggests a certain response or that contains a hidden premise. For example, "like an OSUTES, do you enjoy off-campus accommodation?" This question suggests that you answer like OSUTES. If you do not, you run the risk of not being an OSUTES.
- (7) Respondents must be competent to answer i.e. ask questions that do not require a highly detailed information. For example, a question such as: "How many miles have you driven since obtaining driving license". Also a question such as: "How many hours of television have you watched in the past 100 years". These questions required too much detail that if they are included in a questionnaire, you may not get responses to them.
- (8) Avoid questions that are potentially embarrassing except where they are absolutely necessary. Such questions are in the areas of personal lives of respondents such as: questions on income, number of children, number of times you have sex weekly, age etc Great care/caution must be exercised where questions in the mentioned areas are asked. You could say "now about your income", "which age category do you belong" etc.

RESPONSE RATE

The term response rate refers to the percentage of subjects whose answers are sought and who actually completed the interview or the questionnaire. It is the number of people interviewed divided by the number people sampled. If your initial sample is 1,200 people in a mail survey, and out of the number, 150 questionnaires were returned with no forwarding address, 50 questionnaires were mistakenly sent to people who are dead. This leaves 1,000. If out of the 1,000, only 800 were completed and returned. Then the response rate is

$$\frac{800}{1,000} \times \frac{100}{1} = 80\%$$

Put in a simple form. Assume you sampled 4,000 people in a survey, 3500 questionnaires were returned. Then, the response rate is calculated thus:

$$\begin{array}{l} \text{Sample} \\ \text{Returned} \end{array} = \frac{3,500}{4,000} \times \frac{100}{1} = 87.5\%$$

$$= 88\%$$

While the numerator is/are the number of people who actually responded plus everybody in the study population who was chosen but did not respond, in the first example, you will notice that some respondents were screened out. This screened out sample (i.e. the 150 and 50) do not enter into response rate calculation. What really is the appropriate response rate in a study or in studies have been hotly debated. Perhaps, the main determinant of the adequacy of response rate is through the use of common sense. Common sense because there is no universally agreed rate. The response rate is a function of the method(s) of data collection in survey research (i.e. mail, television, personal interview and group administration).

Nevertheless, some approaches that can be used to increase response rate includes:

- (1) Monetary incentives increases response rate. Similarly, non-monetary incentives, e.g. ballpoint pen can be helpful.
- (2) Preliminary notification, personalization of questionnaire, follow-up letter and assertive personal interview techniques can singly and in combinations increase responses rate.
- (3) Assurance of anonymity in the introduction, a cover letter and stating a deadline can help.
- (4) Stressing the social utility of studies can also help increase response rate.
- (5) The way you design your questionnaire can also increase response rate i.e. the layout of your questionnaire if it is appealing, it can really assist in achieving a high response rate. However, the representativeness of your sample size can bring about response bias. Response bias is a situation in which though, the sample size is representative, but a high proportion of the sample are not truthful.

GENERAL PROBLEMS IN SURVEY RESEARCH

Survey research is the most used methodology in mass media research. This has made it valuable in mass communication research. However, like all things invented, made/produced by man, survey research is not perfect. Some of the general problems of survey besides the advantage and disadvantage discussed earlier are:

- (1) Inability of respondents to recall information about themselves. This may be caused by memory failure, or confusion about questions asked.
- (2) Prestige bias. Rather than admitting that they don't

know, respondents sometimes do not want to show their ignorance about a particular topic. They therefore give you an answer. Prestige bias is particularly present in surveys that probe habits of respondents e.g. newspaper readership habit, television viewership habit etc.

- (3) Deliberate telling of lies
- (4) Respondents may sometimes pretend i.e. sometimes they may not explain their true feelings. Not that they do not have feelings, but they cannot enunciate their feelings

EXPERIMENTATION METHOD

These are the classic method of dealing with questions of causality. An experiment involves the control or the manipulation of a variable by the experimenter and an observation or measurement of the result in an objective and systematic way. The world we live is a complex one, so we experiment copiously in our attempt to develop generalized understanding about the world. Most skills exhibited by adults are learned through experimentation. For instance, eating, walking, riding a bicycle, swimming etc. Students discover how much study is required for academic success through experimentation. Professors also learn how much preparation is required for successful lectures through experimentation. So daily we engage in one experiment.

Etymologically, the word experimentation is a noun derivative of the word experiment. Experiment has Latin origination, "*experimentum*", from "*experiri*" meaning, "to try". Therefore, experimentation design is not limited to the physical sciences. Because it denotes trying and we all try out one thing or the other daily. A classical experiment will answer questions of whether and to what degree a variable (the experimental or independent variable) affects another variable (the dependent variable). In a

simplified form of experimentation, two matched groups are randomly selected from a population (which has been defined by and is of interest to the experimenter); one is given the experimental variable (independent variable) which may be news story, commercial messages, documentary film etc. After the experimental group has been exposed to the variable in question, both groups are observed or measured and the difference between them is the effect of the experimental treatment.

Experimental designs involve three pairs of components:

- (1) Independent and dependent variables
- (2) Experimental and control groups
- (3) Pretesting and posttesting

Independent and dependent variables: Naturally, an experiment examines the effect of an independent variable. The independent takes the form of an experimental stimulus i.e. it is that which is varied and the dependent variable is observed. There is no hard and fast rule about variables (independent and dependent); an independent variable in one study may be a dependent variable in another study. For instance, a topic such as: "The role of commercial messages on level of purchase" studied experimentally. The independent variable is commercial messages, while the dependent variable is the level of purchase. It is worthy to note that in experimental designs, both dependent and independent variables must be operationally defined.

Experimental and control groups: Experimental design hardly ever involves only the observation of an experimental group to which a stimulus has been administered. The researcher also observes a control group to which a stimulus has not been administered. Using a control group allows the researcher to control for the effects of the experiment itself. Control group is the group to which a stimulus has not been exposed to. The rationale is to observe for effects. For instance, you might select a

group and expose to them a commercial message. The group you do not show the commercial message is the control group. Note that the two groups must be similar to one another initially.

Pretesting and post-testing: These are before and after stimuli have been exposed to the experimental group i.e. subjects are measured in terms of a dependent variable and then re-measured in terms of the dependent variable (post tested). Difference noted between the first and the last measurements on the dependent variable are then attributed to the influence of the independent variable. In the commercial messages and level of purchase example given earlier, respondent's level of purchase is measured again after they have viewed the commercial message (pretest) and then (post test). There are three categories of experimentation in behavioral science research (Asika 1991). These are:

- (1) Laboratory experiment
- (2) Field experiment
- (3) Field studies

LABORATORY EXPERIMENTS: This is a type of research in which all the independent variables which can influence (positively or negatively) the dependent variable, but which are considered irrelevant are controlled. According to Wimmer and Dominick (1987), Laboratory research has been a popular approach since early 1900's for two reasons: (1) It follows a fairly simple format in the relationship between the two types of variables is measured under closely observed and controlled conditions (2) It is often valuable in determining causation since variable manipulation is controlled by the research:

The laboratory approach has five basic uses in mass media research:

- (1) To investigate hypotheses and research questions under controlled conditions.
- (2) To develop theories that can be tested in the field.

(3) To refine existing theories and research findings.

(4) To investigate problems in small steps

(5) To ease replication, since conditions of the study are clearly specified.

Researches using laboratory method have control over **THREE** areas of the study. These areas are: (1) The environment (2) The variables (3) The subjects. The Laboratory in social sciences parlance is not limited to a room where you have thermometer, and other laboratory equipment. It is a place which is artificially created and in which the researcher has control over interviewing variables, the environment and the subject(s) for research purpose.

The environment: Researchers are free to structure the experimental environment in almost any way they liked, i.e. the lighting, temperature levels etc can be arranged and altered the way researcher likes. **Control of variable:** In laboratory studies, researchers can control the number and types of independent and dependent variables selected and the way these variables are manipulated. According to Wimmer and Dominick (1987), "variables control strengthens internal validity and helps eliminate confounding influences" **Control over subject's selection.** The researcher using laboratory approaches easily control subjects. This also includes control over the selection process, assignment to the experimental or the control group and exposure to the experimental treatment. For instance, researchers can place limit on the number of subjects participating in a study. Subjects control and variables control are important in experimentation because it allows researchers to rule out rival explanation of results.

ADVANTAGES AND PROBLEMS OF LABORATORY EXPERIMENTS

(1) It allows indepth isolation of desired research

problems and gives room for understanding the interactions that occur between variables.

(2) Laboratory research is the behavioral scientists answer to whether the behavioral science is truly scientific. This is because it enables the behavioral scientist to test hypotheses and to establish the veracity of theories.

(3) It has a high **replicability**, i.e. a study by Dr. A. can be verified and replicated by professor B.

The problems of laboratory experiments include: -

(1) Its artificially especially in the behavioral sciences due to the use of artificially created place unlike a natural place.

(2) Lack of extrapolation beyond the laboratory in which the experiment was performed. For instance, human beings in real life situation do no behave the way laboratory experimental conditions suggest.

(3) Usually necessity subjects' awareness of the testing situation.

FIELD EXPERIMENTS: These are laboratory experiments which are performed on the subject's turf, i.e. rather than study the subjects in an artificially created place, the subjects are studied in the subject's natural place of abode, work place etc. Laboratory experiments on the other hand are done on the experimenter's own turf, i.e. the subjects come into laboratory. Like laboratory experiments, field experiments have both the control group (group that receives no experiment) and the experimental group (group that receives the experimental treatment). However, the researcher does not have as much control over the environment in which the scientist conducts his study in field experiments.

ADVANTAGES AND PROBLEMS OF FIELD EXPERIMENTS

- (1) External validity. Because study conditions closely resemble natural settings. Subjects usually provide a truer picture of their normal behavior and they are not influenced by the experimental conditions.
- (2) Field experiments are useful for studying complex social processes and situations. For instance, Himmelweit, Oppenheim and Vince (1958) study of the effects of television in an English community. Having recognized that television has an impact, the researchers used a wide range of analysis techniques, such as diaries, personal interview, direct observation, questionnaires, documents, and teachers' rating students etc to study the problem. Apparently, a topic as broad as this cannot be easily studied in a laboratory study.

In some field studies, there is the presence of **NON REACTIVITY** i.e. subject may not react to the fact of being studied. This can lead to realism of the subjects' behavior being studied. No doubt, this can enhance the internal validity and the external validity of the study.

The problems of field experiments include:

- (1) Researchers cannot control all the intervening variables in a field experiment. The presence of these experiment and the extraneous variables affect the precision of the experiment and the confidence the researchers may have in the outcome of the research.
- (2) There could be bias amongst respondents. The bias emanates from the respondents' desire to please the researcher by giving him the type of response he wants.

TYPES OF FIELD EXPERIMENTS

There are two categories of field experiments.

- (1) Those in which the research manipulates the independent variable(s). Here, there is a control group and an experimental group i.e. group not exposed to stimuli being studied and exposed. Then comparisons are made between the two groups. For instance, assume a researcher is interested in the effects of television viewing on children learning. He allows a group (experimental) to watch television and then he makes comparisons.

- (2) The second category of field experiment is the experiment in which the independent variable manipulation occurs naturally as a result of other circumstances. What occurs here is the passive manipulation of independent variables. For instance, assume a community with no Global Satellite Mobile Telecommunication (GSM) system is scheduled to have the GSM operational in their community. In an attempt to gauge the effects of GSM on wired telephone system and other means of telecommunication, a researcher might study a sample of wired telephone users before the arrival of GSM. After GSM has become operational, a few months later the researcher can sort out those not using it and proceed to determine the effects of GSM services on wired telephone services. In this example, there is no control over the independent variable (GSM). The researcher is merely taking advantage of existing conditions.

EXAMPLES OF FIELD EXPERIMENTS

Some problems in which field experiments can be used for

includes:

- (1) Interest in what people would do in a week without television (it can be radio, newspaper)
- (2) To test the effectiveness of an advertising campaign
- (3) To test the impacts of a public relations campaign.
- (4) The effects of cable on television viewing etc.

FIELD STUDIES: These are studies in which the existence of variables are fully recognized, but there is no attempt to manipulate them unlike in the laboratory and field experiments. In field studies, subjects are observed and recorded (studied) without any manipulation of variables (independent or dependent). The focus really in field studies is more of description and explanation of subjects than it is with measurements and qualification. A good or perfect example is the study of animals in the jungle (their natural places of abode). Field studies are sometimes called field observations. Field studies are useful for collecting data as well as for generating hypothesis and theories. There are two categories of field observations: (1) Total observation (2) Total participation.

Total observation occurs when the observer (researcher) assumes no role in the phenomenon being studied. Here subjects may or may not be aware that they are being studied. **Total participation** occurs when the observer (researcher) becomes a full-fledged participant in the situation (subjects are usually unaware that a study is being conducted, although some of them may be told). To illustrate the two examples, suppose a researcher wants to study how editors determine what gets published. The researcher has two basic choices. One, to study how the editorial crew determines what gets published by joining them i.e. by working among them as a member of staff. The second approach is by the researcher merely watching the editors. In the second approach (total observation), the researcher does not participate in the process, he merely watches. While in the first approach

(total participation) the researcher is a member of the team. Albeit, most members of the team may not be aware of the intention of the researcher but the editor must be aware.

Some examples of field observation studies in mass communication research include Geiber's (1956) classic study of gate keeping (information flow in the newsroom); Epstein's (1974) description of network news operations; Ravage (1977) study of television production; Lull (1982) study of television viewing habits of more than 90 families etc.

ADVANTAGES AND PROBLEMS OF FIELD STUDIES

- (1) Field studies often help to define basic background information necessary to frame a hypothesis and to isolate independent and dependent variables.
- (2) It also provides access to groups that would otherwise be difficult to observe or examine. For instance, a questionnaire sent to producers of horror films or sex films is not likely to have a high return rate.
- (3) It is usually inexpensive, except where the study requires large number of observers, extensive travel etc.
- (4) The studies take place in the natural setting of the activity being studied and can thus provide data rich in detail and subtlety.

The problems of field studies include:

- (1) If you are concerned with external validity in your research, field study is a bad choice because of the potentially questionable representativeness of the observation made and partly to problems in sampling.
- (2) It also suffers from the problem of reactivity i.e. the very process of being observed may influence the behavior under study.

TECHNIQUES OF FIELD OBSERVATION

Most projects/study embarked upon by students are field studies. This shows how important and widely used field studies are. Field studies are more concerned with exploration and description of phenomenon and in some cases, testing of hypothesis. There are minimum of five stages in a field study. These are: (1) Gaining access (2) Sampling (3) Collecting data (4) Analyzing data (5) Exiting.

Gaining access: This is the first and most important step in field studies. One good way to do it is to define the research goal i.e. you establish why the need to embark on the study. Once you are convinced that the study is worth doing; you establish contact with the subjects you want to study. However, to be permitted to undertake a study by subjects require public relations skills and your persistence. More so, you must be able to convince them that the study will contribute to knowledge or improve the lots of man. Once you have made contact with the subjects, you establish a rapport with them. For instance, assume you want to study television watching behavior of a family; you need to contact them and establish rapport with them before you contact them and conduct the study, and else, it will be difficult to conduct such study. You cannot just enter a house and start conducting studies. Some ways to establish rapport with subjects include: establishment of common interests with subjects; start a relationship with them. If possible, participate in common events and activities with subjects. Also, avoid disrupting subjects' normal routines.

Sampling: This is more difficult in field study. The difficulties have always center on what phenomenon to study; who to study; how to get sample(s) of study i.e. sample sizes. Just as there is no guideline to answer these questions, the research problem and the goals of study are often used as indicators. For instance, if the

goal of the study is for generalization to population, one subject or group is obviously inadequate. Most field studies use purposive sampling (Wimmer and Dominick 1987) i.e. researchers draw on their knowledge of subject under study and sample only from the behaviors or events that are relevant.

Collecting data: Some ways to collect data in field studies include: Note taken, recording of subject activities with camera (although this may affect how subjects behave having known that their activities are being recorded. Albeit while taking notes endeavor to record only what happened and what was said but also personal impressions, feelings and interpretations of what was observed. It is better to have more than required information than to have little.

Analysing Data. Due to the qualitative nature of field studies, quantitative data analysis procedures have only partial relevance. The goal of data analysis in field studies is to arrive at a general understanding of the phenomenon under study. So the researcher must be flexible in analysing data as well as when designing the study.

Exiting. Exiting from the group or setting under study must be handled with diplomacy. It is easy if the researcher is known as an observer. But where he is known as a member of the group, exiting from the group may be difficult. In some cases, the group may have depended on the researcher in some way and the sudden departure may have a negative effect on the group as a whole. In some cases, the realization that a group, due to sudden exiting has been infiltrated might be unpleasant.

CASE STUDIES

This research method examines many characteristics of one subject. Case study approach usually tries to learn "all" about the

area the investigator is interested in for the specific cases over a period of time. Case study method like focus group study is commonly referred to as qualitative research. A case study uses as many data sources (means of inquiry, refer to chapter one table 1.0) as possible to investigate systematically an individual, group, organization, or event. Case studies are used often in medicine, management, clinical psychology, history, economics, communication/mass communication etc. A classic mass media case study is the Gate-keeper studies.

Yin (1984) defines a case study as, "an empirical inquiry that uses multiple sources of evidence to investigate a contemporary phenomenon within its real-life context in which the boundaries between the phenomenon and its context are not clearly evident". Case study method is not synonymous with participant observation and participant observation is not case study. Case study research can be single case and can be multiple cases (comparative case study). Most histories of media houses can be classified as case studies. This is because they provide long-term in-depth examination of a specific newspaper, magazine, broadcasting station, advertising agency, public relations department, news agency, book publishing outfit, films producers etc. While they provide much valuable insight, they cannot in scientific sense be generalized to other institutions. Before generalizations can be made, additional information is nearly always needed.

Case studies are not always designed to prove anything because the results are based on a single example and hypotheses are rarely formulated from case study results. The method however provides a great many observations, ideas and insights, which can be followed with other types of investigations, which will yield generalisable results. Another famous example of the case study method is the Woodward and Bernstein's book on Watergate "**All the President's men**". The two reporters in the

book used interviews and documents to answer how and why was there a cover-up and how did it occur. The case being refer to is the Richard Nixon Watergate scandal that led to Nixon [President of America] resigning from office.

DOING A CASE STUDY

The stage involves in doing a case study includes:

[1] Design, [2] Pilot study, [3] Data collection, [4] Data analysis and [5] report writing

Design. The first concern in a case study is what to ask. The case study is most appropriate for questions that begin with **how** or **why**. The second design concern is what exactly constitutes a case? A case may be an individual, an event [s] a specific decision, a particular organisation, a programme, a country etc. consult literatures when faced with what to use a unit of analysis in case study.

Pilot study. This is a mini study before the actual study is embarked upon. Your concern in pilot study is to be able to refine your instruments and to be able to determine which is the best approach to use to gain access to your sample and how best to record responses. It also includes getting what will be needed to facilitate study. The pilot study also allows the researcher to try different data gathering approaches and to observe activities from several trail perspectives.

Data collection. There are different sources of data that can you can use in case studies. They include: [1] documents, [2] interview, [3] observation, [4] physical artifact---- a tool, a piece of furniture or even a computer printout [refer to chapter one for more]. Multiple sources of data collection help the case study researcher improve the reliability and validity of the study. Yin et.al. [1983] have found that multiple sources of data gathering

are better than single source.

Data analysis. There is no specific formula or guide to analyse data in case study. What should be uppermost when analysing case study data is that it is hard to generalize. Researchers should avoid making generalizations from a case data.

Report writing. There is no hard and fast way to report writing in case study. The report can take the normal approach of problem, literature review, methods, finding and discussion. The report can also take the non-traditional method suitable to the research. No matter what approach is used, you must always consider the interest of your audience. This is very important because a case study report for policy makers would be done in styles different from one to be published in a scholarly journal.

ADVANTAGES AND PROBLEMS OF CASE STUDIES

- [1] It provides tremendous detail about phenomenon being studied. This is because it uses multiple sources of data gathering method.
- [2] It is very good and appropriate for a researcher who is trying to find clues and ideas for further research. This is not suggesting that it should be used only at the exploratory stage of research as it is also a good technique for gathering descriptive and explanatory data.
- [3] It can suggest why something has occurred.

Some of the problems of case studies are:

- [1] General lack of scientific rigour
- [2] Not easily open to generalization because emphasis is on a case
- [3] May be time consuming and occasionally produce massive quantities of data that are difficult to summarise

INDEPTH SURVEY

Indepth survey research method is otherwise called indepth interview research method or intensive interviews. It is a form of qualitative research. Indepth interview possesses the following features among others: (1) It uses smaller sample sizes, (2) it provides detailed background on why respondents give a specific response, that is it probes the why behind the responses of respondents. (3) indepth interviews allow for lengthy observation of nonverbal responses of respondents due to the fact that interview is conducted face to face. (4) it is influenced by the interview environment.

MERITS AND DEMERITS OF INDEPTH INTERVIEW

- (1) Due to the fact that respondents are asked to provide answers to their responses, indepth interview provide a wealth of details.
- (1) it provides more accurate responses to sensitive issues that other research methods may not provide, this is due to the rapport between the interviewer and the interviewee. The demerits of indepth interview include: (1) generalizability is sometimes difficult to establish. This is because the interview is usually conducted with a non-random sample. (2) Due to the open nature of the questions respondents are free to answer certain questions and not answer some and this will no doubt affect the research where very needed and essential questions are ignored by respondents. (3) Indepth interview method is very sensitive to interviewers' bias this is because the interviewee may have known some facts about the interviewer in the course of the interview and this will definitely affect the interviewees response. (4) indepth interview methods are problematic when it comes to data analysis this is due to the non-standardize nature of respondents' responses.

QUESTIONS FOR REVIEW

- [1] Use two or more survey studies in journals of mass media research and answer the following questions in relation to the article [s]
 - [1] What was the purpose of the survey?
 - [2] What problem[s] was investigated?
 - [3] How were the data collected?
 - [4] What type of information was produced?
- [2] Identify and discuss **four** methods of data collection in survey research?
- [3] The structure of questions researchers can use are many in survey research. Identify and discuss **two**
- [4] There are **five** basic requirements of a good questionnaire. Enumerate and discuss them
- [5] Discuss **four** ways to increase response rate to questionnaire in survey research
- [6] Differentiate between laboratory and field experiments research
- [7] Field studies are better than field experiments. Do you agree?
- [8] Critically examine the techniques of field studies
- [9] How will you do a case study?
- [10] Compare and contrast survey research and case studies
- [11] Examine **Eight** features of a good survey research questions

CHAPTER 6

CONTENT ANALYSIS, HISTORICAL METHODS AND FOCUS GROUP DISCUSSION

CONTENT ANALYSIS

This research methodology is one of mass communication's great contributions to social scientific inquiry. This is because the methodology derived from the communication science and it has largely remained there. As of fact, communication scholars devised it and communication scholars have used it most. The main unit of analysis in content analysis is written or recorded messages. Modern content analysis is traceable to World War II when the allied intelligence units monitored the number and types of popular songs played on European radio stations. By comparing the music played on German stations with that on other stations in German occupied Europe, the Allies were able to measure with some degree of success, the changes in troop concentration on the continent. After the war, content analysis was used by researchers studying propaganda in newspaper and radio. Bernard Burleson (1952) published a book titled content Analysis in communication Research. This book signaled that the technique had gained recognition as a tool for communication scholars.

Charles R. Wright (1975) in *Mass Communication: A Sociological Perspective* defined content analysis thus:

A research technique for the systematic classification and description of communication content according to certain usually predetermined categories. It may involve quantitative or qualitative analysis or both. Technical objectivity requires that the categories of classification and analysis be clearly and operationally defined so that other researchers can follow them reliably. For example, analysis of the social class membership of television character requires clear specification of the criteria by which class is identified and classified so that independent coders are likely to agree on how to classify a character. It is important to remember however that content analysis itself provides no direct data about the nature of the communicator, audience, or effects. Therefore, great caution must be exercised whenever this technique is used for any purpose other than the classification, description and analysis of the manifest content of the communication.

Waltz and Wenir (1978) defined content analysis as any systematic procedure devised to examine the content of recorded information. Krippendorf (1980) defined it as a research technique for making replicable and valid references from data to their context. Kerlinger (1973), a method of studying and analyzing communication in a systematic, objective and quantitative manner for the purpose of measuring variables. McQuail (2000) defined it this way:

A technique for the systematic, quantitative and objective description of media texts, that is useful for certain purposes of classifying output, looking for effects and making comparisons between media and over time or between content and "reality". Content analysis is not well suited to uncovering the underlying

meaning of content, although it can provide certain indicators of "quality" of media.

Berelson in Budd et al. 1967:3 described content analysis as: "objective, systematic and quantitative description of communication content". In whatever way(s), content analysis is defined, three concepts require analysis. These are: (1) Systematic (2) Objective (3) Quantitative.

Systematic: This means that everything to be done must follow explicit and verifiable procedure. From the content to be analyzed, samples selection etc, each item must have an equal chance of being included; the evaluation process i.e. all content under consideration is to be treated in exactly the same manner. There must be uniformity in the coding and analysis procedure and the researcher must also be systematic in his evaluation.

Objective: Here, the personal feelings and biases of the researcher should not enter into the findings. If the study is replicated by another researcher, the analysis should yield the same results. The researcher should also be objective in the specification of the unit of analysis and the makeup and definition of content categories.

Quantitative: The goal of content analysis is precision, therefore, quantification is important because it aids researchers. Again, quantification allows researchers to summarise results and facilitates arriving at accurate judgments. It also makes interpretation and analysis simpler.

TOPICS APPROPRIATE FOR CONTENT ANALYSIS

Content analysis methods may be applied to any form of communication (written, verbalized and recorded). The content to be analyzed may be books, a speech, newspapers, magazines,

poems, songs, paintings, letters, laws, constitutions, home videos etc. For instance, the topic can be: are American films more romantic than British films? It could be: is the content of home videos in Nigeria more of violence than love? It could be newspapers coverage/reportage of Ife/Modakeke crises? It could be magazines reportage of politics? Others could be: were the Yoruba films of the 1980s more culture oriented than Hausa films of the same period? Are books written in the 1960s in Nigeria more of call for nationalism than Ghanaian books of the same period? Is Nigerian Television Authority (NTA) news broadcast pro government? Are music's of 1950s 1960s in Nigeria more of politics than of 1980s and 1990s? Remember that your concern is the manifest meanings of the content you are researching into and not the latent meanings.

USES OF CONTENT ANALYSIS

There are several purposes for the use of content analysis in mass media research. One fact that cannot be run away from is that the mass media have pervaded the lives of man. May be the statement should have been made this way imagine the world without the mass media? Over the years, mass media messages have become increasingly popular that they have been associated with increasing violence, negative behaviours and increasing anti-social attitudes. These have led to concerned people, government, policy maker and even the United Nations General Assembly calling for caution in the use of the mass media. There is no doubt that the mass media (machines used to extend man's sight or sense of hearing; and to duplicating man's writing) is not the major concern of complaints, but the symbols (messages) of the mass media. The crux of content analysis technique is the message(s), therefore, the need to examine the uses of content analysis method in social scientific research. These uses include: [1] To describe communication content, [2] To compare media content to the real world i.e. to examine how the mass media are

affecting the social standard that exists, [3] To assess the image of particular group in society. The group could be majority or minority group or even as small group. The concern is to examine how the media report the group, [4] To test hypotheses of message characteristics i.e. to relate certain characteristics of the source of a given body of message content to characteristics of the messages that are produced, [5] To establish a starting point for studies e.g. cultivation analysis, agenda setting studies etc.

ADVANTAGES AND PROBLEMS OF CONTENT ANALYSIS

[1] It is economical in terms of money and time. For instance, one person could undertake it. There is no need for large members of staff and no special equipment are required [2] Safety is also another advantage. In content analysis it is usually easier to handle a portion of the study or the entire study than for other research methods [3] It permits you to study processes occurring over long time since what you do is to use documents. For instance, you could study newspaper reportage of nationalists' activities before independence in Nigeria [4] Content analysis is obtrusive i.e. content analysed seldom have any effect on the subjects being studied. For instance the novels, books, music, newspapers and magazines that you content analysed already exist. [5] It yields quantifiable data [6] It uses materials that are relatively easy to obtain and work with.

Some of the problems of content analysis are: [1] Limited to the examination of recorded communication (written, oral, graphic etc), [2] Finding a representative sample might be a difficult task and this can affect the findings, [3] Determining measurable units can be a big task. For instance, it is foolhardy to count the number of full stops or commas in a write up, [4] Defining terms operationally can pose a problem if not well handled; this can adversely affect content categories and coding.

DOING CONTENT ANALYSIS: STEPS TO UNDERTAKE

Below is a list of steps to follow in doing content analysis research. These steps though sequentially listed they need not be followed in the order given: (1) Formulate the research questions or hypotheses, [2] Explain what you will be investigating and give reasons why the research is worth doing, (3) Define operationally terms in your topic. If you are studying prostitution, tell us how you define it. But remember your operational definition must be measurable, (4) Select and explain the basis for your sample in the population, (5) Explain what your unit of analysis is, (6) Code the content according to established definition, (7) Determine your coding system, (8) Train coders and conduct a pilot study, (9) Using your coding system, analyze the sample you have selected, (10) Present your findings using quantified data that you have obtained from your content analysis, (11) Interpret your results using your numerical data and other relevant materials to your research and search for indications.

N.B: Your content category must be mutually exclusive, exhaustive and reliable. A content category is mutually exclusive if a unit of analysis can be placed in only one category. Exhaustively talk about a unit of analysis fitting into a category not two, while reliability is about different coders agreeing in the majority about the proper category for each unit of analysis.

FOR FURTHER READING SEE:

- [1] Author Asa Berger (2000) **Media and Communication Research Method**, Sage Publications: London.
- [2] Roger D. Wimmer and Joseph R. Dominick (1987, 2006) **Mass Media Research: An Introduction**, Wards Worth Publishing Company: New York.
- [3] Earl Babbie (1986) **The practice of social Research**, Wards

Worth Publishing Company: London.

- [4] Idowu Sobowale (1983) **Scientific Journalism**, John West: Lagos.

HISTORICAL STUDY

History is about the past. History relies on documents and other materials, such as interviewing people, reading books, articles, records (audio, audiovisual) and works of art, objects and whatever else can be used to gain information. History is from the Greek word, *histor* meaning an investigation or inquiry. According to Aristotle, "History is an account of what individual human beings have done and suffered" Gasset says thus, "history is the systematic science of that radical reality, my life". He continued that history is therefore a science of the present in the most rigorous and actual sense of the word. Fling (1899) writes that history deals with the past, but not in an indefinite way. "It is with the past in which human society has developed and the problem with which it deals is this: how has the complex world society evolved from the primitive, disconnected beginnings of four or five thousand years ago? It is its business to reconstruct the process and to describe the successive steps". Fling [1899] asks: how does history perform this duty? What is the method? He continued thus: "it cannot be the method of observation, or the method of natural sciences. Here, the object is being studied directly. Not one observation, but many are made and under the most favorable circumstances. The observations thus made are recorded at once and in exact scientific language, the meaning of which is not ambiguous. But scientific truth is not established by the work of one man. Other scientists must make similar observations and obtain like results before these results can be accepted as fully demonstrated".

Collingwood (1948), in Uyo (1973), *why Historical method is the least scientific* said thus: "History essentially is a way of

thinking. All history is the history of thought and all thought is historical in character. Historical knowledge is the knowledge of what mind has done in the past and at the same time, it is the redoing of this, the perpetuation of past acts in the present". The object of history, Collingwood continued, is to find out, "res gestae" actions of human beings that have been done in the past. History proceeds by the interpretation of evidence; where evidence is a corrective name for things which singly are called documents and a document is a thing existing here and now, of such a kind that the historians by thinking about it, can get answers to the questions he asks about past events. Summarizing the idea of history, Collingwood said that historians nowadays think that history should be: (1) A science, or an answering of questions (2) Concerned with human actions of the past (3) Pursued by interpretation of evidence and (4) For the sake of human knowledge.

Fling [1899] pointed out that the historical method is quite different and the reason is very plain: the objects are not here to be observed. He stressed that the past can only be known to us through its records, technically called the sources: material remains such as bodies of men, clothing, weapon, roads, newspapers, books and tradition (oral and written). Continuing, he said that the historical method or research, also known as historiography, is the painstaking, methodical search for "truth" of the past by ascertaining the certainty of sources scientifically. He reiterated that the first question the historian puts to the sources that he has brought together are: are they genuine? Or are they what they appear to be, that is, forgery? And are they what I think they are (self-deception)? Having decided that the material is genuine, the historian goes further to deal with further questions such as, shall it be admitted as evidence? Expatiating on the historical method, Fling said that the historian must know when the source originated, where it originated and who the author was. A document whose author, date and place or origin is totally

unknowable is good for nothing. After these treatments (External criticism), the further question as to what this evidence is worth is dealt with by internal criticism that is, interpretation and grouping of facts with their psychological and social environment and with the philosophy of history.

While it is evident that the historical method does not fall into the category of imaginative literature, it however does not possess much of the characteristic features of the scientific method, a limitation which comes obviously from the subject matter of history: people, events/occurrences. Barracough in Uyo (1973) concluded that if a Poll were taken, an overwhelming majority of professional historians today would be found to reject the notion that history can or should be classified with the sciences, or that the methods of science and still more, the purpose or objects of science are applicable to their work. They asserted according to Barracough that history is a discipline *su juris* and *sui generis* i.e. a discipline in its own right, distinct from other disciplines and possessing a methodology of its own. This view was corroborated by Berger (2000:138). Putting vent to Barracough's view, Uyo (1973) concludes that historical method is not simply a particular application of the scientific method but it is a method devised by historians themselves from their own experience to deal with the problems arising from the particular body of materials, or the particular sciences, with which history deals.

From the immense amount of material available to historians, they have to select relevant and important sources. The big question is: how do they do this? Berkhofer Jr. (1969) answered this question in his book *A Behavioral Approach to Historical Analysis*. He said:

Historians do not recapture or reconstruct the past when they analyze history; they interpret it according to surviving

evidence and conceptual frameworks. All of past reality can never be known to them because not all evidence remains. Furthermore, historians do not choose to deal even with all the facts derivable from the available evidence. They confine their interest to man's past, but not even all of that concerns them, for they further select from these data, those parts that can be organized according to some interpretation or theory. Thus, an historical synthesis is a highly selective account of a postulated past reality. Theory in the most general sense is crucial to every phase of Historiography.

The long and short of the statement above is that all historians have some theory or conceptual framework that guide them and helps them select materials to use in writing history. Berkhofer explains further that because views of and theories about people and society continually keep changing, historical interpretations of any given subject also keep changing. He writes:

It should now be evident why history must be and is rewritten constantly in terms of the historians own times. Every step of producing history presumes theoretical models of man and society, which in turn seem to change in terms of the shifting conceptions of man and society occurring in the historian's own society.

HISTORY: IS IT OBJECTIVE OR SUBJECTIVE?

Many people have the belief that history is a fact based

chronology, i.e. it is based only on facts. Viewed in this perspective, it suggests that historians tell us what happened in the past and how things changed overtime. No doubt, historians based their writings on facts (or on what they think are facts), they are not supposed to be writing fiction. Nonetheless, as facts-based chronology, or the study of past politics as history is, it is obvious that they cannot (historians) deal with all the facts involved with what they are studying. They select those facts (those events) they consider to be more significant and most revealing from all the materials they have. So, there is an element of interpretation involved in history based of course on the selection process. This explains why historians often differ with one another even when they write about the same topic. It is factual that as new concepts and theories are developed, historians change that interpretation about what they study. These elements of interpretations based on the selective process and taking cognizance of the individual differences of man, determine the objectivity or the subjectivity of history.

TYPES OF HISTORICAL RESEARCH

There are eight types of historical studies. They are:

1. **Biographical studies** focus on the lives of important persons. If written by the person, it is called autobiography, if written about someone, it is known as biography.
2. **Movement or idea studies.** This is the tracing of the development of political, social or economic ideas and movements e.g. Marxism, Capitalism, Socialism etc.
3. **Regional studies.** Focus on particular cities, states, nations and regions.
4. **Case histories.** Focus on social settings of a single event. It may be Ife/Modakeke crisis, Zangoff Kafaf crisis, September 11th 2001 terrorist attack in the U.S. Etc.
5. **Institutional studies.** Concentrate on specific

organization. For example, military in politics.

6. **Selected studies.** This involves identifying and paying close attention to a special element in some complex process.
7. **Editorial studies.** It deals with the translating or processing of documents.
8. **Comparative studies.** Deal with relating ideas, thoughts, events/occurrences, talents, nations/countries etc.

CHARACTERISTICS OF HISTORICAL RESEARCH

The purpose of historical research is to reconstruct the past systematically and objectively by collecting, evaluating, verifying and synthesizing evidence to establish facts and reach defensible conclusions, often in relation to particular hypothesis. Historical research is characterized by the following:

1. It is dependent on data observed/gathered by others rather than by the researcher.
 2. It must be rigorous, systematic and exhaustive and not a sloppy, indisciplined collection of in appropriate, unreliable or biased information.
- While it is similar to "Literature Reviews," it is however more exhaustive, seeking out information from a larger array of sources. It also tracks down information that is much older than required by most reviews and hunts for unpublished material not cited in the standard references.

CONDUCTING HISTORICAL RESEARCH

The steps in conducting historical research are:

1. Define the problem i.e. narrow your focus
2. State the research objective, if possible, the hypotheses that will give direction and focus to the research.
3. Collect the data keeping in mind the distinction between primary and secondary data sources. Make sure your

sources are reliable.

4. Determine the concept(s) or theory of history you are studying. This may not be easily recognizable, but no doubt, when you write history, you have to have an organizing principle that tells you what material is good and what isn't, what you should focus on and what you shouldn't. Your study must be organised around concept(s) or theory of history. Berger (2000:140) asked this question: what concepts or theory of history do you hold? [1] History is the record of progress, [2] History is the study of class conflict, [3] History is bunk, [4] History is the story of great figure, [5] History is the study of everyday life.

5. Evaluate the data by applying both internal and external criticism. On internal criticism, your main concern is: are the data accurate and relevant. And on external criticism, you bother is, are the documents reliable and authentic. Part of evaluation is finding the impacts of your research topic i.e. the effects of what you are studying on man, society and knowledge.

6. Report the findings including a statement of the problem, a review of sources materials, a statement of underlying assumption, basic hypotheses and methods to test the hypotheses, the findings obtained, the interpretations and conclusions reached and a bibliography. Be mindful of style when writing your findings.

FOCUS GROUP DISCUSSION (FGD) METHOD

The Focus Group Discussion (FGD) method otherwise called group interview is a research method aims at good understanding of audience attitudes and behaviour. The approach is that from 6 to 12 people are interviewed simultaneously, on a topic or

research interest, by a moderator using open ended questions format. The focus in FGD is understanding of audience attitudes and behaviour concerning phenomena. According to Kruger and Casey (2000), FGD has four characteristics: (1) it involves people (participants). (2) the participants MUST have common traits or qualities. (3) FGD provides qualitative data, that is data from FGD are used to enhance understanding and are not used to test hypotheses or to generalize to population except where several FGD are conducted within a defined population. (4) FGD has a focused discussion, that is questions to be asked are predetermined, the order of the questions is established and the questions are structured to enhance the goal of the researcher. Albeit, the moderator is free to deviate from the questions structure where relevant information is presented by the participants. FGD falls under the qualitative research tradition

MERITS AND DEMERITS OF FGD

The merits of FGD include: (1) it allows researchers to collect preliminary information on a phenomenon (2) FGD can be used to detect ideas to research further into (3) it is a valuable tool in pilot studies (4) FGD can be done quickly (5) the fact that it is done with very few sample size means that the data gathering and interpretation are easier and manageable, (6) FGD is relatively cheap to conduct. Other merits of FGD are: (7) flexibility in question design, (8) responses from FGD sessions are more complete due to the fact that the sample size are few. The demerits of FGD include: (1) FGD depends heavily on the skill of the moderator, therefore this can be a disadvantage where the moderator is inexperienced (2) FGD sample in some cases are not representative of the population and this translates to mean that the result is not generalizable (3) the environment of the session can play a negative role if not controlled, (4) the face to face interaction between the moderator and the sample can play a negative role by way of influencing the thought of the

respondents.

STEPS IN CONDUCTING FGD

The steps involve in conducting an FGD are: (1) Define the problem, (2) select sample (3) establish number of groups necessary (4) prepare the study mechanics (5) prepare the FGD materials (6) conduct the session (7) analyse the data (8) prepare a summary report, (9) draw your conclusion, findings etc

METHODOLOGICAL ISSUES IN SOCIAL RESEARCH: ERROR, VALIDITY AND RELIABILITY

When indicators do not measure accurately and precisely what it is suppose to measure, then, there is **ERROR**. Error is or has become a research fact. There is in absolute nothing that can be done to prevent it. Rather, there are strategies for handling it. Error is from old French, "errou", from Latin, "error", from "errare", meaning, "to stray" REFER TO CHAPTER FOUR for types of error in research. Albeit, the purpose of research design (method) is, in part to maximize the accuracy of the information that can be obtained for a given expense. Maximizing the accuracy of information requires minimizing errors in the information. There are three basic strategies for dealing with potential errors in research.

- (1) Minimize individual errors through effective research design,
- (2) Minimize total error through error trade-offs and
- (3) Measure the amount and/or impact of any residual error.

Minimize Individual error: This involves taking bold steps to reduce individual error, for instance, sampling error can be reduced by increasing sample size, though this will lead to increase in cost. Another way to reduce sampling error is to move from a simple random sample to another e.g. systematic sample

or even stratified sample. Again, you can reduce the efforts of non-response error by making sure you contact all members of a sample or making sure that all members of a sample respond to all your questions.

Trade-off Individuals errors: This involves deliberate allowing of some errors in order to avert other more damaging errors. For instance, you could "trade" sampling error for non-response error. What you do is to reduce the sample size; this of course would increase the probable amount of sampling error. However, the funds thus freed could provide additional mailed following questionnaires and telephone calls to the final group of non respondents. These efforts may reduce non-response error more than enough to offset the increase in sampling error. Thus, the result is a reduction in total error and an increase in total accuracy.

Measure Residual Error: It is impossible to eliminate all possible errors. Therefore, what should be done is to measure and/or estimate errors. This is preferable to ignoring them. It is better to estimate that the net effects of errors are so small and insignificant to affect negatively the research than to ignore them. **Refer to chapter four on how to calculate sampling error.**

RELIABILITY

The success or failure of research is dependent upon measurement. While the purpose of pilot studies include refining measuring instrument used. It is however a fact that precision and accuracy are obviously important qualities in research measurement. Thus, researchers should not just have a general knowledge as to what validity and reliability are, but they should be seriously concerned with how to validate an instrument (research design) and how to establish the reliability of research designs. Researchers should not force a research method on their topic, but should consider the relevance, uses, importance and

purpose of research methods, vis-à-vis, the purpose, relevance and importance of the problem they investigate.

Reliability is a matter of whether a particular technique, applied repeatedly to the same people or object, would yield the same result each time i.e. a measure is reliable if it consistently gives the same answer at different points in time. For example, suppose I asked you to estimate my weight, you look at me and you guess 60 pounds. Now suppose I asked you to estimate the weight of 60-70 other people and while you are busy doing that I changed my clothes and disguised perfectly that you did not recognize me again. When it was my turn, you guess 90 pounds. This exercise clearly showed that estimating people's weight is not a reliable technique. So the best way to do it would be to use a scale. Even then, with a scale, you have to be careful, because the scale could have problems (deliberately created by the owner).

Also, assuming you are conducting a study on the topic, "Television viewing habit of parents". Between January and June 2002, some of the parents said they watch TV two hours a day; some said four hours a day; some said six hours. Now between July and December, the same group that said they watch two hours daily said they watch eight hours, those that said they watch six hours said they watch three hours. Apparently, if hours watched is a big variable you want to use in your study, then the families are inconsistent in their responses.

Note that a completely unreliable measurement measures nothing at all. If a measure is repeatedly given to individuals and each person's responses at a latter session are unrelated to that individual's earlier response, the measure is useless. If the responses are identical or nearly identical each time the measure is given, the measure is reliable. Remember that an unreliable measure cannot be used to detect relationship between variables. So an unreliable measure composed mainly of random error and random error is seldom related to anything else.

COMBATING RELIABILITY PROBLEMS

- (1) Ask respondents for information they are likely to know the answer and be clear in what you are asking.
- (2) You can ask respondents for the same information more than once, using either the same or similar question (Test-retest reliability).
- (3) Use measures that have proven their reliability in previous research. For instance, measuring attitude require scale. The most used scale in mass communication research is Likert scale, follow by Semantic differential scale.
- (4) Split half technique is another method that can be used. Here, only one administration of the measuring instrument is made, but the test is split into two halves and separately scored. For instance, if the test is in form of questionnaire, the questionnaire could be split into two, with the even number separated from the odd numbers and each administered differently. Alternatively, the questionnaire could be sectionalized into two and tested. A correlation coefficient is then computed between the two sets of scores. **FOR MORE DETAILS, READ WIMMER AND DOMINICK (2002).**
- (5) Also, clarity of questions, specifically, training of interviewers will avoid a great deal of unreliability and grief. Thus, if more than one person sits to reach an agreement on how they are going to go about an assignment, discussing the various positions that might be represented and reading what has been agreed on together, then, the measure will be more reliable.
- (6) You can also ask respondents the same question in

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another way. For instance, the same question could be asked using open-ended, close ended or Likert scale structure. However, be cautious, let the questions be a bit far from each other and word them carefully to avoid respondents going back to the previous one in order to harmonies it with the latter.

VALIDITY

Besides a measure being reliable, it must be valid. Validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration. A valid measuring device measures what is supposed to measure. **Validity** is defined as the degree to which a measuring instrument measures what it is designed to measure. From the foregoing, validity is almost never an all-or-none proposition; it is usually a matter of degree. In essence, a measuring device is rarely totally valid. The "in-totally" of measuring device is indicative of the imperfection of man. Every measuring instrument is designed for a specific measurement. If correctly designed, it measures what it is supposed to measure, vice-versa, if not properly designed.

There are **FOUR** major types of validity. Each one however, has corresponding techniques for evaluating the measurement method (Wimmer and Dominick 1987). They are: (1) face validity (2) predictive validity (3) concurrent validity (4) construct validity. **Face Validity** is a subjective evaluation to see whether on the face of it, a measure actually appears to measure what it is supposed to measure. When one makes a judgment as to whether a test is valid for certain purposes by reading over the items but without any objective evaluation. One is assessing the face validity of the test. Though subjective, face validity cannot be discarded. As of fact, when a researcher writes questions for a test or he collects items for an instrument, the face validity

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concept will be employed. Face validity is a good starting point for assessing the instrument in researches.

Predictive Validity: This refers to the extent to which a test can predict the future performance of individuals. A test has predictive validity when it can effectively indicate how a person will do on a later task. The sole factor in determining validity here is the measurement's ability to correctly forecast future behaviour. The concern is not what is being measured, but whether the measurement instrument can predict future behaviour. An example is Joint Admissions and Matriculation Board (Jamb) exams used to determine entrance into tertiary institutions. (This may not be a perfect example, taking cognizance of Nigerian factors). Another example is student's performances in semester exams. This performance no doubt predicts what class a student will fall at the end of his/her studies.

Concurrent Validity: This method measures instrument against some present criteria, i.e. It refers to the relationship between scores on a measuring instrument and a criterion or criteria available at that same time. For instance, you can validate a test of proofreading ability by administering the test to a group of professional proofreaders and to a group of non-proofreaders. If the test discriminates well between the two groups, it can be said to have concurrent validity. Except for time dimension, concurrent and predictive validity are very much alike. While the relationship between the scores of individuals in a test and performance in a future task is determined in predictive validity, the relationship between the test scores and a present criterion is sought in concurrent validity.

Construct Validity: This involves relating a measuring instrument to some overall theoretical framework to ensure that the measurement is actually logically related to other concepts in the framework. Ideally, a researcher should be able to suggest

various kinds of relationship between the property being measured and other variables. For construct validity to exist, the researcher must show that these relationships are in fact present. For example, an investigator might expect the frequency with which a person views a particular television newscast to be influenced by his or her attitude toward that program. If the measure of attitude correlates highly with frequency of viewing, then, there is some evidence for the validity of the attitude measure. By the same token continued Wimmer and Dominick (1987), construct validity is evidenced if the measurement instrument under consideration does not relate to other variables when there is no theoretic reason to expect such a relationship. Thus, if an investigator finds a relationship between a measure and other variables that is predicted by a theory and fails to find other relationships that are not predicted by a theory, there is evidence for construct validity.

It is pertinent to point out that though reliability and validity are related. Reliability is necessary to establish validity. Also, a reliable measure is not necessary a valid one. For instance, measuring the concept social class and using only formal level of education as the indicator is a reliable measure. It is obvious that formal level of education alone cannot give valid results. Other variables such as income, occupation, place of abode, type of cars used etc will make the measure to be valid. As a rule, multiple indicators of concepts enhance validity because validity is more sensitive to nuances that exist in attitudes, characteristics and behaviors than reliability.

QUESTIONS FOR REVIEW

- (1) How do you go about conducting a content analysis of a topic such as mass media coverage of the September 11th, 2001 terrorist attack in the United States?
- (2) Enumerate and examine the advantages and

disadvantages of content analysis research method?

- (3) Historical research cannot be scientific. Discuss?
- (4) Identify and discuss **FOUR** kinds of historical research?
- (5) How will you conduct a historical research?
- (6) How will you combat errors in research?
- (7) Name and examine **TWO** variants of research validity?

CHAPTER 7

RESEARCH PROCEDURE

Research is as simple as it is complicated. Thus, researchers must follow a sequence of steps to increase the chance of producing relevant data. An attempt at not being systematically scientific is an attempt at multiplying the amount of error in a study. This chapter selectively discusses the process of scientific research from identifying researchable topics to replication of studies.

RESEARCH TOPICS SELECTION: WHERE IDEAS COME FROM

Selecting researchable topic may not be a problem to researchers i.e. those whose duty is to do one research or the other. But it often poses a big task to many beginners, particularly, students writing term papers, projects, theses and dissertations. As a student, I could recall that I did not find it easy to come up with the topic to investigate in my undergraduate project. As of fact, I wrote three topics of interest, submitted them to my supervisor and he rejected all. The problem I experienced then, just as undergraduates of today do, is that of knowing where to start. Luckily, there are myriads of sources available (unknown to me then) in searching for topics.

These sources include:

- (1) Academic Journals e.g. Unilag Communication Review

- (2) Periodicals weekly publications, monthlies etc.
- (3) Daily newspapers/watching television/listening to radio.
- (4) Everyday encounters e.g. while talking with friends, colleagues.
- (5) Data archives e.g. Research and Marketing Services (RMS), ZUS Bureau, Libraries etc.

FACTORS DETERMINING TOPIC RELEVANCE

After a topic has been chosen, the next question is: what and how relevant is the chosen topic. Some of the determinants of topic relevance are:

- (1) Is the problem important enough to bother with? I.e. of what importance is the topic to man; to the society and to knowledge in that area? If the problem has no importance, forget it.
- (2) Is the topic too broad? Avoid too broad a topic, you will eventually have too much data you may not need, or you may even discover that you cannot do it because of the huge cost involved and the long time it requires. For instance, a topic such as, "the effects of mass media information on voters" is apparently too broad. It is better written as, "the effects of television information on voters". Or better still, you choose a program on the TV and find out the effects of the program on voters behaviour. Remember to make your topic not too broad, so as to be able to manage it.

- (3) Can the problem really be investigated? I.e. the problem you are researching into, can you find solution to it with the facilities and information available? For instance, a researcher interested in finding out how people who do not own, nor have access to radio will react to national issues will encounter the problem of finding people who neither own, nor have access to radio. Another point to consider is whether all terms of the proposed study are

definable i.e. can be operationally defined. You should also search for literature in the area of the topic. Your concern really is to see how the topic was investigated, problems encountered if any, methods used and conclusions drawn.

- (4) Are there ethical problems involved in the research? I.e. will it violate the privacy of people? If so, should it be done, should it not. If it should be done, how do we go about it?
- (5) What costs and time are involved in the analysis? You must realize that no research is timeless. Similarly, research cost money. These factors you must take into consideration before embarking on the research.
- (6) Can the results of the study be generalized? This is the external validity of the research. This is important because the fact that it can be generalized adds value to it, unlike a study that cannot be generalized.
- (7) Is the methodology appropriate? Note that a marvelous idea can be hindered by a poorly planned method. Therefore, do not force an approach (method) on a topic, but let the nature of the topic determine the methodology to use. Another good way to do this is to look at existing literatures in the area you are investigating.

CASTING TITLE OF YOUR RESEARCH

Casting the title of a research topic can be an easy task if you are focused. The questions you ask yourself in casting the title of your work include:

- (1) Does the title capture the essence of the problem being investigated?
- (2) Is the title specific?
- (3) Is it attractive?
- (4) Is it too long?
- (5) Is it easy to understand, clear and unambiguous?

- (6) Does it contain the concept you are measuring?
 - (7) Does it have, or belong to a theoretical framework?
 - (8) How does it relate to the identified theoretical framework?
- The title of your research topic is as important to the entire work, because it sets the tone and selects the reader(s). Thus, great care must be taken to ensure the title of your research shows explicitly the concepts you are measuring. Remember that a look at the title of your research should give an indication of the methodology used.

WRITING RESEARCH PROPOSAL

A PROPOSAL: This is an intention of what you want to do. A plan put forward for acceptance. The research proposal is as essential as an architect's drawing is to the building of a house. Just as no one will start the construction of a house by rushing to dig a hole in the ground for the foundation, you cannot begin a research work except you have a solid foundation a proposal. A research proposal otherwise called prospectus, a plan, an outline, draft etc, deals with the problem, delineate methods by which either the materials will be utilized, or the data will be processed and interpreted.

The research proposal importance lies in its affordability to evaluate the total design before an inordinate expenditure of time, effort and perhaps money is invested in the project/thesis. A careful inspection of the proposal by the supervisor will reveal the degree to which the researcher has thought through the details of his investigation. A sound proposal prevents mistakes. It prevents the frustration of misdirected effort or ill-conceived research.

For the award of a grant, subsidy, or for the endorsement of any sizeable undertaken, a well-written proposal is a prime requirement. Major research projects are frequently approved or rejected on the basis of the proposal alone. It is therefore essential

to set forth clearly the problem and to indicate precisely the manner in which you propose to solve the problem within the framework of the scientific method. Whatever is your purpose i.e. whether your work is a graduate work, you seek the funding of a project from a foundation, a clear, well-written proposal is indispensable. Nothing can be substituted for a thorough explanation of problem and procedure.

Note that a proposal is a straight forward document, purge it of irrelevancies. It contains all that is necessary and nothing more. As a straight forward document, it stands upon its feet. A proposal is not a literary production just as an architect drawing is not. The intention of the two is to communicate clearly. A proposal presents the ideas with economy of words and precision. It indicates how a research project is to be executed to completion. It provides no opportunity for time writing, for literary composition, no verbal extravagance and no platitudinous expression. It is stylistically stark and prosaic in expression. It provides an opportunity to express ideas, thoughts and procedures in languages which is sharp and precise. It should be clearly organized. Remember this rule: whatever does not contribute directly to the delineation of the problem and its solution must be eliminated. Basically, research proposal answers three questions:

- (1) What is the problem? I.e. a critical dissection of the concepts of study (problem).
- (2) How will the problem be solved i.e. what method to use and how to use chosen methods?
- (3) Why researching into the problem i.e. what relevance is the problem to man, to society, to the advancement of knowledge generally and specifically to the area of study researched into.

An ideal research proposal is three chapters i.e. chapter one, chapter two and chapter three. Remember that each of the

chapters is distinct and related, i.e. each chapter performs different but contiguous functions. A research proposal is an **INTENTION**. It does not include data analysis and reporting of data i.e. does not include chapters Four and Five. Research proposal usually begins with a title. The first chapter exposes the problem of the study. The second reviews the literature and the third, the method of the study. Other sections of research proposal are: the qualifications of the researcher; the outline of the proposed study; and selected bibliography. An example of how to write a proposal is given below. This example gives the outline only, not the content.

CHAPTER I: THE PROBLEM

- (1) Background to the study
- (2) Statement of the problem
- (3) The purpose or objectives of the study
- (4) The questions/Hypotheses
- (5) The scope of study
- (6) The significance of study
- (7) Definition of terms
- (8) The assumption(s) if any.

CHAPTER II: LITERATURE REVIEW

- (1) Conceptual review
- (2) Theoretical review
- (3) Research/empirical review

CHAPTER III: METHODOLOGY

- (1) Identification and Justification of type of research design and method to be used.
- (2) Population of study
- (3) Sampling plan unit, size and technique

- (4) Data collection instrument
- (5) Data collection procedure
- (6) Data analysis procedure
- (7) Budget and time schedule.

REVIEWING THE LITERATURE

Literature means a set or collection of works or writing on a particular subject. To review literature in research involves researcher going through relevant or related works in the area(s) he is researching into, to see how the works has been done, which methodology was used, is being used; is being used more/most and why. The aim also includes finding out what instrument has been used. A search of the available literature saves time and money and it is an invaluable guide to researchers. This is so because you might find that the data you are about getting exists in the archives. Besides, you could also discover that the methodology used by earlier researchers could guide what you want to do and how you can do it successfully. According to Agostino (1980), in conducting a review of existing literature, researchers should bear these questions in mind:

- (1) What type of research has been done in the area? I.e. is it pure research or applied research, or both?
- (2) What has been found in previous studies?
- (3) What suggestions do previous researchers make for further study?
- (4) What has not been investigated in the area?
- (5) What research methods were used in previous studies?
- (6) How can your proposed study add to knowledge in the area?

Uyo (200) quoting Koul (1984) noted that research takes advantage of the knowledge which has accumulated in the past as a result of constant human endeavor. He continued that it can never be undertaken in isolation of the work that has already been

done on the problems which are directly or indirectly related to a study. He stressed that a review of the related literature must precede any well-planned research study. He emphatically said:

Although the formulation of the problem comes before review of the related literature in most schemes or models of the research process, there is no doubt that a review of the literature could be invaluable in formulating the research problem. Indeed, a review of the literature is a source that the researcher can use for selecting a problem.

ATY, Jacobs and Razzavieh (1972) concluded that a review of the literature serves the following functions:

- (1) Helps the investigator to define the frontiers of his field.
- (2) An understanding of the theory in the area enables researcher to place his question in proper perspective.
- (3) Studying related literature, researchers will learn which procedure and instrument have proved useful and which is less promising.
- (4) A thorough search through literature avoids unintentional replication of previous studies.
- (5) It places the researcher in a better position to interpret the significance of results.

According to Uyo (2002), "by reviewing the literature related to the research question, the researcher recognizes the fact that knowledge is cumulative and that there is a scientific community whose fountain of knowledge he/she can drink". He continued that the researcher recognizes that his or her own contribution to knowledge cannot be in isolation of the fund of knowledge accumulated by the community of researchers. The activities of the reviewing of literature include:

- (1) Listing the key words of concepts or terms related to the

problem.

- (2) Identifying or locating the sources of information that is, primary and secondary sources in the library and elsewhere.
- (3) Reading and taking notes from selected references such as (1) research articles in journals (2) theses and dissertations (3) books (4) monographs (5) news papers (6) government documents (7) computer generated reference materials.
- (4) Organizing the related literature review according to (1) conceptual definitions/expositions (2) theoretical expositions and methodological approaches.

A researcher who conducts an investigation into problem without recourse to existing work in the area is said to have fallen into the syndrome of "Ivory Tower Research", such research adds nothing to our understanding of the subject area. Note that a good search of existing literatures is an insurance against accident. If it is well done, researchers will go back to their chapter one to make adjustments; this is because researchers will definitely discover one error or another in chapter one, especially their research objectives.

OPERATIONALISING CONCEPTS/CONSTRUCTS

Operational Definition: is a definition that specifies patterns of behaviour and procedure in order to experience or measure a concept. There is no doubt that social scientists need to operationally define the concepts and constructs they measure. This view is informed by the fact that concepts and constructs are abstractions, they are given definitive meanings based on experience and knowledge of the definers. Since the two (concepts and constructs) constitute what we study in research, then, researchers cannot afford not to give explanations on what they mean or represent in their researches. According to Wimmer

and Dominic (1987:48), "operational definitions are indispensable in scientific research because they enable investigators to measure relevant variables". They emphasized that it is necessary to provide operational definitions for both independent and dependent variables.

Explaining the necessity of operational definitions in communication research, Kibler (1970) said thus:

Communication researchers concentrate on concepts which name the more observable aspects of experience. Moreover, scientists use precise definitions adapted specially from common use for scientific inquiry. Scientific definitions differ from those in common use in that they identify features of the discernible only under special conditions. The words themselves do not have meaning; they are given meaning through their use in particular investigations and their meaning is so specified in the investigations.

There is no doubt that colleagues evaluate the acceptability of the results of an investigator's study partly on the validity of the operations used in arriving at the results. Chaplin and Krawiec (1960) affirmed that the validity of a scientific finding or a given theoretical construct is contingent on the validity of the operations used to arrive at that finding or construct. This they tagged Operationism. Kibler (1970) interpreted Chaplain and Krawiec statement by asserting that an experiment's results and conclusions cannot transcend its methodology.

There are **TWO** types of definitions in research: [1] Constitutive definition and [2] Operational definition. **Constitutive Definitions:** Are used when one defines a concept/construct in

terms of other concepts or constructs i.e. when we substitute the concept or construct we are defining with other concepts or constructs. For instance, we can constitutively define communication as an act of talking and listening; listening and talking. Thus we have substituted the concept of communication with concept of act; talking and listening; listening and talking. Similarly, we can constitutively define business as an act of buying and selling. Constitutive meanings are essential part(s) of the structure of a thing, therefore, concepts/constructs possessing constitutive meaning deal with the more convert aspects of a theory. Thus, if a concept/construct is to be scientifically useful they must possess constitutive meaning i.e. they must be capable of contributing to the formulation of theory. What has been done in the examples given above is that we have brought into the definition (communication and business) differently related concepts that help us understand the concept or construct we are defining. Constitutive definition is not very useful in research because it gives dictionary definition of variables.

Operational Definitions: While it is true that an adequate scientific theory contains enough operationally defined concepts/constructs. It is however a fact that all concepts/constructs in a scientific theory need not be directly defined operationally. But those concepts/constructs which are not directly defined operationally (i.e. those possessing only constitutive meaning) must at least be connected with observable data through other concepts/constructs which are defined operationally. Operational definitions therefore are those concepts/constructs which are defined in terms of observed data or specified to reproduce the phenomenon or object being described. They serve as bridge between theoretically defined constructs possessing constitutive meaning and observable data. Sometimes, operational definitions are called "rules of correspondence", or "rules of interpretations", because they define, or at least partially define certain theoretical constructs by

connecting or linking them to observable data or operations Kibler (1970:34).

According to Rapoport (1952: 123-135), "an operational definition specifies what one must do to experience the thing defined; the investigator defines a term by specifying what to observe and how to observe it". Viewed this way, operational definitions serve as a basic means of control in empirical inquiry. Over the years, numerous criteria for operational definition have been formulated and summarized. Bachrach (1965), modifying Feigl (1945) criteria listed the following criteria:

- (1) They (operational definitions) should be locally consistent, that is, derived logically one from the other and be related to other operational definitions.
- (2) They should be definite, preferably quantitative.
- (3) They should be empirically based, linked to the observable.
- (4) They should be technically possible, subject to experimental manipulation.
- (5) They should be inter-subjective and repeatable, demonstrable in different species and repeatable by different experimenters.
- (6) They should aim at the creation of concepts which will allow for laws or theories of greater predictiveness.

There is no doubt that researchers often have difficulties in defining operations in language. The result is that the researcher attempts to reduce the ambiguity of the commonsense language, i.e. the common-usage meanings of vague terms, which may impede effective communication. The likelihood of both the researcher and the audience not understanding each other lies in the researcher specifying the operations he followed in making observations. Operational definitions begin with observation. According to Bachrach, "the observer records and reports facts and communicate these facts in a manner that will give maximal clarity". Thus, recording and clearly reporting facts are two of the major tasks of the scientific researcher.

Kerlinger (1973) classified operational definitions into two types: [1] Measured operational definition and [2] Experimental operational definition. **Measured Operational Definition:** Specifies how to measure a variable, i.e. it stipulates what one must do to measure a given variable. For instance, a researcher studying activism and book reading might operationally define activism as a subject score on a seven-item short form activism scale. So whoever is on score 7 (seven) is the most active, while whoever is on score 1 (one) is the least active. **Experimental**

Operational Definition: Explains how an investigator has manipulated a variable, i.e. it stipulates the operations or specific procedure followed by the investigator when manipulating a variable. This type of definition is used when defining the independent variable in a laboratory setting. For instance, motivation can be defined operationally as a process of inducing productivity in an employee by offering him some form of incentives or rewards. Thus, in the actual experiment, the researcher offers the employees some form of incentive and measures how motivated the employees become after its administration. Or, a researcher studying the impact of television violence might manipulate media violence by constructing two 15 minutes' films. The first, labeled, "violent condition" might contain violent scenes. The second, labeled, "nonviolent condition" could depict non-violent scenes; both films shown to different groups of selected people who are now mixed with selected number of 20 ten years old. The aim is to measure how violent or non-violent these two groups would be to the 20 (twenty) ten years old. Operationally defining a variable force, the researcher to express abstract concepts in concrete terms. Occasionally, after unsuccessfully grappling with the task of making a key variable operational, the researcher may conclude that the variable as originally conceived is too vague or ambiguous for his study and that redefinition is required, thus, the use of operational definition. As a rule, operational definitions must be expressed concretely so that they communicate exactly

what the terms represent. There is no single infallible method of operationally defining a variable. Thus, no operational definition satisfies everybody. You (investigator) must decide which method is best suited for the research problem at hand.

UNIT OF ANALYSIS

In mass communication research, there is a wide range of variation in the what, who or whom is being studied. This does not mean the topics of research, but the actual what and who/whom is being studied **the unit of analysis**.

Knowing the unit of analysis or unit of study is relevant in research when researchers want to draw the sample for their studies. Because researchers cannot study everybody, they have to pick a representative sample. The unit of analysis therefore is what, who/whom is being studied and what constitutes the population from which the sample will be drawn. Babbie (1986:74) defined it as, "these units that we initially describe for the ultimate purpose of aggregating their characteristics in order to describe some larger group, or explain some abstract phenomenon".

What constitutes the unit of analysis can be a function of the research methodology used. For instance, in survey research, the unit of analysis is human beings. They may however be studied individually, or in-group. In content analysis, the unit of analysis is social artifacts (products of social beings or their behaviour, such as books, newspapers, poems, paintings, scientific discoveries etc). Thus, unit of analysis can be individual, group, organizations/institutions and social artifacts. It is essential that you be able to identify what your unit of analysis is before embarking on a research, this will help you to be focused on how to gather your data. Sometimes, the unit of analysis may not be clear-cut i.e. the topic may not suggest one unit of analysis, rather

suggests two or more. For instance, when the focus of your research is to study Olabisi Onabanjo University students' reaction to national issues such as, Academic Staff Union of Nigerian Universities strike, your unit of analysis is **group**. Similarly, when you study smokers' reactions to tobacco advertisement warnings, your unit of analysis is **group**. Also, studying people's reaction to tobacco advertisement warning, your unit of analysis is **individual**. When your focus is newspaper coverage of national issues, your unit of analysis is **social artifacts**.

DATA COLLECTION INSTRUMENT

These are how you go about creating measures for your research work, i.e. how you create measures to gather data. Creating measures to gather data is an invaluable exercise to research. This is because the data gathered is what the researcher interprets to get results. How you go about creating measure is a function of the research method used. For instance, if your research method is survey, your measures take the form of questions. In content analysis method, your measure will be constructed from the information in the record i.e. you will be making abstractions. Of course, you have little control over how the information and potential concepts are measured unless you collect additional data. In observation method, you measure takes the form of questions and observations. For experimentation method, your measure is manipulation. Note that manipulation as used here does not mean fraudulence, but skillful utilization e.g. to skillfully mix chemicals to produce results. In social scientific research e.g. laboratory research, what researchers do is to manipulate variables. For case study, your measure can take several forms e.g. questions, observations, abstractions. The reason for this is because a case study uses as many data sources as possible to investigate systematically an individual, group, organization or artifacts. Besides, case studies are done when

researchers desire to understand or explain a phenomenon. The measures to use in gathering data in historical study is question and abstraction (Refer to table 1.0 for tabular representation of the above). Meanwhile, your measures must be valid and reliable.

CONDUCTING PILOT STUDY

A pilot study is a trial run of a study conducted on a small scale to determine whether the research design and methodology are relevant and effective. The purpose is to check for problems either in the questions in the questionnaire, questionnaire design; choice of methodology etc. A pilot study is a trial run of the entire research process to fine-tune all that needs fine tuning before an inordinate expenditure of time and money is wasted. What is done is that small sample are selected and the research questionnaire is administered on them. With this, areas of misunderstanding or confusion can be easily corrected without wasting time or money. Pilot study results provide researchers with approaches to use in editing the questionnaire i.e. to delete, or to rewrite questions, to change open-ended questions to closed-ended questions (or vice-versa). A second trial run is recommended if several problems are uncovered in the first run. A pilot study should include training for interviewers to ensure that they fully understand what to do.

ANALYSIS OF DATA

DATA ANALYSIS is the transformation of the observations gathered in the field into a system of categories and the translation of these categories into codes that could be quantitatively analysed (Babbie 1986). It is simply making sense out of data gathered. However, you cannot make sense out of data gathered without processing the data. Data processing therefore is the link between data collection and data analysis Uyo, 2002:98). The relationship between/among the three: data

collection, data processing and data analysis can be represented thus:

Data collection → Data processing → Data analysis

Being the crowning step of the research process that leads directly to the results and conclusions, data analysis has two objectives:

- (1) To summarise and describe the data
- (2) To make inferences from the data to the population from which the sample was drawn.

Data analysis in quantitative research involves descriptive and inferential statistics. There are three main methods of data analysis in quantitative research. They are: univariate analysis, bivariate analysis and multivariate analysis. When researchers focus on a single variable at a time, they are doing univariate analysis. When they examine two variables at a time, it is bivariate analysis. When they look at three or more variables simultaneously, they are engaging in multivariate analysis. The purpose of data analysis really is to make sense out of the responses to variables gathered. This can be done one by one (univariate), two together (bivariate), three or more together (multivariate).

Univariate analysis may be done by describing by numbers, or displayed in some illustrations as a table, a graph, or a chart. Similarly, researchers can describe a variable by using one of the measures of central tendency (mean, median and mode) or all of them. He can construct table of frequency distribution. He can also use measures of dispersion such as the range, the interquartile range, the variance, standard deviation, etc. For instance, assume a communication researcher administered his questionnaire on habits of mass communication students in OOU (Olabisi Onabanjo University). Assume also that he gathered his

data using these variables: (1) Sex (2) Age (3) Year of study (4) Faculty/department of study (5) Access to newspaper. Using univariate analysis, the researcher can come up with a frequency table (Table 7.1) below.

Table 7.1: Sex of respondents in percentage

Sex	%
Male	55
Female	45
TOTAL	100 N = 100.

Table 7.1 is a mere percentage table. Albeit, univariate analysis, though useful, but it serves little scientific-value since it cannot explain anything, it merely describes the status-quo (Uyo, 2002). Bivariate analysis is the beginning of scientific explanation of phenomena. The researcher not only constructs tables, but he/she relies more on statistical techniques to measure the degree of relationship between the two variables under examination. Such statistical techniques produce measure of relationship (association) referred to as correlation coefficient. Correlation coefficients reflect the strength and direction of association between variables and the degree to which one variable can be predicted from the other. Such summary statistics include: The Chi-square, Kendall's correlation (t), Person's correlation @, etc.

Uyo (2002) stressed that multivariate analysis carried the researcher into the world of partial correlation, multiple correlation, multiple regression, analysis of variance (ANOVA) etc. No doubt, quantitative analysis can add value to a research, but researchers need to be cautious. Although Statistical Package for Social Science (SPSS) and the computer have considerably

lessened the arduous task involved. While you are at liberty to do your data analysis using univariate, bivariate or multivariate analysis, you should also remember that analyzing data is a process. Ajala (1996) outlined the process thus:

- (1) Sorting out the responses. Here, the researcher discards some responses that are inadequate, unreliable and incomplete. Those found useful are grouped according to the requirement or dictates of the study such as the demographic variables like age, sex, education, income, place of abode etc.
- (2) Coding Data are categorized and numerals are assigned to each category so as to facilitate counting and tabulation, or facilitate easy keying of the data into the computer. Remember that you must be consistent in the way you code your data. Also, where you use close-ended questions, your coding is easier because the responses would have been coded in your questionnaire.
- (3) Description of data. The researcher gives an adequate description of the data via doing the following: (1) Characterization i.e. what is typical. For instance, how many newspapers were read per day, per week, or might want to know what kind of newspapers most of the respondents prefer. (2) To indicate how widely individuals in the group vary. For instance, you might want to know whether the respondents are similar in their newspaper readership habits or whether there is diversity. (3) To show the relation of the different variables in the data to one another. For instance, you might wish to know whether the frequency of newspaper reading is related to age, sex, interest etc. (4) To describe differences among two or more groups of individuals.

Analysing data requires extreme care, else you will analyse the data collected wrongly. Most especially, when sorting, coding and describing the data. The researcher needs to be careful when tabulating or cross tabulating his/her data. He must also be

cautions to avoid picking the wrong cases. There are some points to remember when analyzing your data. These according to Ajala (1996) include:

- (1) Not all-statistical matter must be tabularly presented. If the responses can be smoothly presented in prose, do it, but make it simple and easy to understand.
- (2) Two large a mass of statistical data in the text has a tendency of distracting and confusing the reader. If it is detailed, present such calculations as an appendix. Readers are interested in summaries and conclusions. Remember that only few are impressed with detailed calculations and these few can read the details in the appendix if they wish.
- (3) Construct your table in such way(s) that it may be easily read and understood without reference to the text of the thesis.
- (4) Remember that it is boring and amateurish to read in prose the same data already in tables.
- (5) Discuss data presented immediately under each table. Do not construct two tables before discussion; it is sometimes confusing and not neat.
- (6) Your discussions should be intelligent presentation of your findings, such as surprises, confirmation or refutation of expectation, comparison of cases on the tables etc. What you are discussing are your findings, try to remove yourself from what you are discussing. Also, purge your discussions of irrelevancies. No verbosity and no platitudinous expressions.
- (7) Discussion of findings on the table should be in percentages, not the raw score or the frequency.
- (8) Tables must have titles that describe the contents of the tabulation or cross tabulation.
- (9) Tables must have number for identification purpose.
- [10] Present your tables as neat as possible by having only horizontal lines. Try as much as you can not to have

vertical lines.

[11] Use generous spacing between columns and rows and proper alignment to clarify relationship within the table.

In your report, endeavor to do the following as regards numbers:

- (1) Try not to begin a sentence with a numeral. If it must begin with a number, write it in words. (2) Percentages must be in numbers e.g. 60 percent of.... (3) Write numbers from zero to nine in words. From 10 to infinity write in numerals except for first word of a sentence. (4) Use figures to express any number above or below 10 that are: *Units of measurement or time *Ages *Time and data *Page numbers *Series of four or more figures *In narrative, the word, 'haira', 'percent', or 'percentage' should be used. But in citing amounts of money or percentages, the symbols # and % should be used.

REPLICATION

Replication is an independent verification of a research study. For the fact that the results of any single study are by themselves only indications of what might exist and not necessarily what exists, then, there is need for replication of studies. A study provides information that says in effect, "this is what may be the case". So to be relatively certain of the results, the research must be replicated.

What to replicate in a study include:

- a. Research question or hypothesis
- b. Research methods and design (to avoid design specific results).
- c. Research subjects (to avoid sample-specific results)
- d. Statistical analysis (to eliminate method-specific results).

Replicating a study is generally advocated so as to establish

scientific fact. Lykken (1968) and Kelly et al (1979) identified **FOUR** types of replication that can be used to validate a scientific test. These are:

[1] **Literal Replication:** This involves the exact duplication of a previous analysis, including the sampling procedure, experimental condition, measuring techniques and methods of data analysis.

[2] **Instrumental Replication:** This entails duplicating the dependent measures used in previous study and to vary the experimental conditions of the original study.

[3] **Operational Replication:** Here, researchers duplicate only the sampling and experimental procedure of a previous analysis to test whether the procedure will produce similar results.

[4] **Constructive Replication:** This involves testing the validity of methods used previously by deliberately avoiding the imitation of the earlier study. The researcher will vary both the manipulations and the measures used in the first study. He/she simply begins with a statement of empirical 'fact' uncovered in a previous study and attempts to find the same 'fact'.

Replicating a study will not only confirm or repudiate the previous study, but it is also an excellent way to show that the researcher knows what he/she is doing. In addition, replicating a study bestows credibility on the researcher in addition to being the hallmark of a good research.

HAZARDS OF RESEARCH

Research projects do not always turn out the ways expected by researchers. In fact, Murphy's Law that says "anything that can go wrong will go wrong" and Charles Dickens, "accidents will occur in the best regulated homes" aptly captured what could

happen in research. Conducting research requires planning. Presented below are what Wimmer and Dominick (1987:40) described as TAT (They are always there) i.e. problems researchers could encounter in research studies.

(1) A research project always takes longer time than planned.

(2) No matter how many people review a research proposal and say that it is perfect before you start; people will always have suggestions to make it better after the study is completed.

(3) There are always errors in data entry.

(4) The data errors that take the longest to find and correct are the most obvious.

(5) Regardless of the amount of money requested for a research project, the final project always costs most.

(6) A computer program never runs the first time.

(7) A sample is always too small.

(8) Regardless of how many times a pilot study is conducted to make sure that measurement instructions are clear, there will always be at least one subject who doesn't understand the directions.

(9) All electronic equipment breaks down during the most crucial parts of an experiment.

[10] Subjects never tell you how they really feel or what they really think or do.

QUESTIONS FOR REVIEW

(1) Research is as simple as it is complex. Discuss?

(2) Name 15 sources of researchable topics?

(3) Examine the determinants of topic relevance?

(4) A research proposal is an intention of what you want to do. Discuss?

(5) Reviewing the literature is an unnecessary thing to do in research. Do you agree?

(6) Identify and examine **FIVE** factors determining the

adequacy and relevance of the title of a research work?

- (7) How relevant is operationalisation of concepts and constructs in research?
- (8) In mass communication research, there is a wide range of variation in what, who or whom is studied. How relevant is this statement to unit of analysis in research?
- (9) How you go about creating measures for your research is a function of the research method used. Discuss?
- (10) Pilot study is useless in research. Discuss?
- (11) Identify and examine **FOUR** ways to replicate a study?
- (12) Why replicating a study?
- (13) Enumerate and discuss **EIGHT** problems researchers are likely to encounter when doing research?
- (14) Discuss **FOUR** things to replicate in a study?
- (15) Identify and examine **THREE** main methods of data analysis in quantitative research?

CHAPTER 8

BASIC STATISTICS IN MASS COMMUNICATION RESEARCH

It is meaningless to collect data without giving it form, i.e. without making meanings out of it. One of the ways to make data gathered meaningful is to analyse and interpret it. Another way is to statistically interpret it after analysing it. Statistics provides mathematical methods for organizing, summarizing and analyzing data that have been collected and measured. However, statistics is no miracle worker, so, if research question is misdirected, badly phrased, or if a study uses measurements and design that are sloppy, statistical techniques cannot salvage it. Statistics can only produce valid results if the data variables they comprise have been scientifically established. The aim of statistics is to reduce the amount of error in a study and not to replace the decision to be made. While it is a fact that mass communication students are intimidated by empirical research because they feel uncomfortable with mathematics and statistics. It is also a fact that empirical research is a logical rather than a mathematical operation. Mathematics is merely a convenient and efficient language for accomplishing the logical operations inherent in good data analysis. Babbie (1986:406) described statistics as the applied branch of mathematics especially appropriate to a variety of research analyses. There are generally two types of statistics used in mass communication research. They are: [1] Descriptive statistics and [2] Inferential statistics

DESCRIPTIVE STATISTICS: This is a method for presenting quantitative descriptions in a manageable form. The aim is to reduce data sets to allow for easy interpretations. Sometimes we want to describe single variables and sometimes we want to describe the associations that connect one variable with another. For instance, if you asked 2000 people how many hours they spent watching television yesterday and you recorded all 2000 answers at random on a sheet of paper. You are likely to have too many responses and you will be hard pressed to draw conclusions from a simple examination of that paper. Whereas, if you used descriptive statistics, it will be easier, because the data gathered will be more manageable. *Two methods are usually used in descriptive statistics: [1] Data distribution and [2] Summary statistics*

DATA DISTRIBUTION: Researchers display their data by distributing it in tables or graphs. A distribution is a collection of numbers. For instance, below is a hypothetical distribution of the responses of 20 people to the question, "how many hours did you spend watching television yesterday" (Table 8.1). It would be difficult to draw any conclusions or make any generalizations from this collection of unordered scores. Thus, to make the numbers more manageable, the data should be arranged in a frequency distribution i.e. a table of possible scores, ordered according to magnitude and actual frequency of occurrence (Table 8.2).

Table 8. 1: Distribution of Respondents into How Many Hours of Television Watch

Respondents	Hours Viewed	Respondents
A	1.0	K
B	2.0	L
C	0.5	M

D	2.5	N	3.0
E	4.0	O	3.5
F	2.0	P	1.5
G	1.0	Q	2.5
H	3.0	R	2.0
I	3.0	S	
0.0			
J	2.0	T	0.0

Table 8. 2: Frequency Distribution of Responses into How Many House Did You Spend Watching Television.

Hours	Frequency
0.0	2
0.5	1
1.0	3
1.5	1
2.0	6
2.5	2
3.0	3
3.5	1
4.0	1

The same table can be constructed using group intervals, each of which contains several score levels. (Table 8.3). This table is a more compact frequency distribution than table 8.2. However, the scores have lost their individual identities.

Table 8.3: Frequency Distribution of T.V. Viewership Scores Grouped in Intervals

Hours	Frequency
0.0 - 1.0	6
1.01 - 2.0	7
2.01 - 3.0	5
3.01 - 4.0	2

You can also add the column proportion to the frequency distribution tables. For instance, the data can be transformed into percentages. To get the percentage of a response, divided the frequency of the response by N or the total number of responses in the distribution. N is the sum of the frequency column. (Table 8.4). Note that percentages allow comparison to be made between frequency distributions that are based on different values of N .

Table 8.4: Frequency Distribution of TV Viewership in Percentages.

Hours	Frequency	Percentage
0.0	2	10
0.5	1	5
1.0	3	15
1.5	1	5
2.0	6	30
2.5	2	10
3.0	3	15
3.5	1	5
4.0	1	5
N = 20		100%

Similarly, some frequency distributions give the cumulative frequency (CF). Cumulative frequency is constructed by adding the number of scores in one interval to the number of scores in the interval above it. (Table 8.5). This table displays the frequency distribution from table 8.4 with the addition of percentage column, a cumulative frequency column and a column showing cumulative frequency as a percentage of N .

Table 8.5: Frequency Distribution of TV Viewership Scores

Hours	Frequency	Percentage	CF	CF% of N
0.0	2	10	2	10
0.5	1	5	3	15
1.0	3	15	6	30
1.5	1	5	7	35
2.0	6	30	13	65
2.5	2	10	15	75
3.0	3	15	18	90
3.5	1	5	19	95
4.0	1	5	20	100
N = 20		100		100%

Sometimes, data are presented in graph form. Graphs usually consist of two perpendicular lines, the x axis (horizontal line) and the y axis (vertical line). Statistics usually lists the scores along the x axis and the frequency or relative frequency along the y axis. One common form of graph is the **HISTOGRAM** or bar chart. Graphs generally present information in visuals, while tables do not. In graphs, you can easily determine at a glance which variable occur more or most, or which variable is more dominant over others. Graphs can be in any of the following:

- (1) Graphs in picture form
- (2) Graphs plotted co-ordinately i.e. xy graphs
- (3) Graphs not co-ordinately plotted e.g. pie chart, bar chart.

The conventions in recognizing graphs include:

- (1) The axis must be labeled
- (2) There must be title for the graph
- (3) The graph must have a source
- (4) It must have an identification

Histogram is used to display information in the frequency distributive way of particular classes of a variable. Note that the frequency of occurrence is clearly displayed. For instance, let us draw a histogram for the weight of 10 introduction to mass communication research students.

(1)	Oriola	= 65	(6)	Sumbo	= 62
(2)	Nkechi	= 60	(7)	Sina	= 65
(3)	Josephine	= 70	(8)	Olamoye	= 76
(4)	Nkiru	= 62	(9)	Okon	= 70
(5)	Friday	= 56	(10)	Muyiwa	= 55

To construct the histogram, you re-arrange the weights in ascending order and categorise them e.g. 55, 56, 60, 62, 62, 65, 65, 70, 70, 76 frequency occurrence. To make the histogram easier to construct, group the data by using intervals, i.e. putting them into class. Note, there is no hard and fast rule on the class to use. You are free to use any interval of your choice. In this table (table 8.6), the class intervals used is 10.

Table 8.6: Group Intervals of Weight of 10 Students

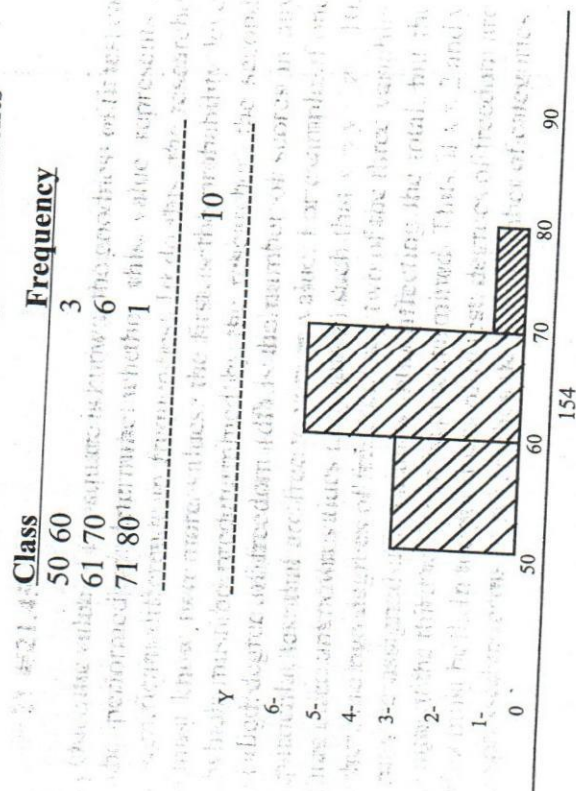


Figure 8.1: Weights of 10 Introduction to Mass Communication Research Students in Kilogram.

Source: Mass Communication Department OOU

Bar Chart like histogram, presents information on one variable. It enables you to display the number of cases present in every category and also enables you to compare the value in each category. Let us construct a bar chart on the circulation of "AIYEKOTO SUN" (AS) newspaper, and "BABCOCK HERALD" (BH) newspaper. Assume AS sold 180 thousand and BH 140 thousand copies in January, 2002.

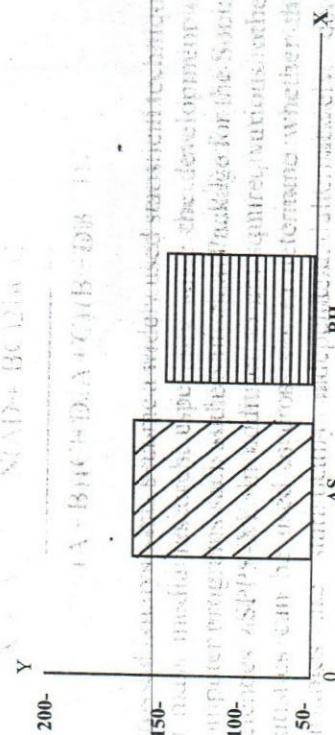


Fig 8.2: Circulation of AS and BH for January 2002

Source: Mass Communication Department OOU.

Practically, bar chart presents one variable information (univariate), but sometimes, bar charts do present two variables (Bivariate) information. The information presented must however be closely related to the other, i.e. any point on the table must relate to the two variables. Bar chart presenting two information is referred to as **COMPOSITE BAR CHART**. The variables could be displayed side by side or placed on top of the other.

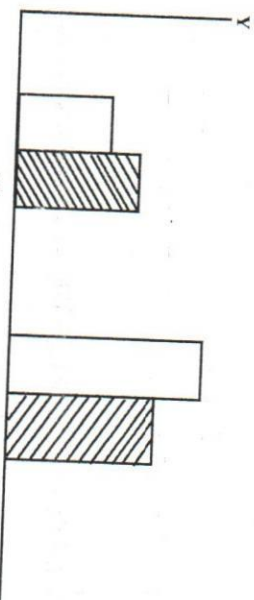


Table 8.7 and 8.8 are examples of composite bar chart.

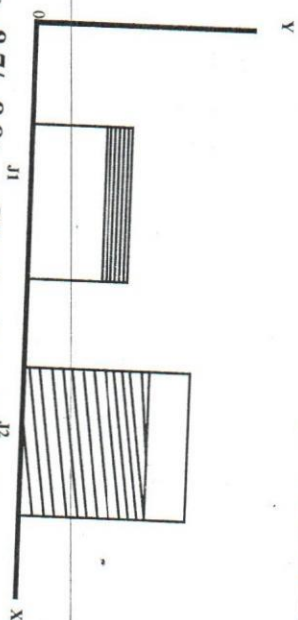


Table 8.7/ 8.8: Clients Attendance/Sales At Molony Supermarket In December 2002
Source: Author

KEY: The unshaded part represents Sales; the shaded part represents Client attendance

SUMMARY STATISTICS: While descriptive statistics aims at presenting quantitative descriptions in a manageable form, summary statistics aims at further condensing quantitative data so as to make such data much more manageable by measuring two basic tendencies of distributions: Central tendency and dispersion.

MEASURES OF CENTRAL TENDENCY: Central tendency statistics answer the question, "what is a typical score"? Central

tendency data provide information about the groupings of the numbers in a distribution by calculating a single number that is characteristic of the entire distribution. However, what constitutes a typical score is a function of the level of measurement and the purpose for which the data will be used. (Refer to Chapter two for details on levels of measurement). There are three types of central tendency data. They are:

- (1) Mode
- (2) Median
- (3) Mean

The Mode: This is the score(s) occurring most frequently in a distribution. Oftentimes, you don't need to calculate the mode, but you determine it by inspecting the array e.g. 4,2,3,10,4,6,4,5,11,4,2,3,7,4. You could see that the number with the most frequency is 4. Thus, 4 is the mode. Nevertheless, though, mode is easy to determine, it has some drawbacks, which include: It focuses on only one possible score and can thus camouflage important facts about the data when considered in isolation. For instance, in the above given array, the mode is 4, but the most striking feature about the array is the way they cluster around 5.

Median: This is the mid point of a distribution i.e. half the scores lie above it and half lie below it. If the median has an odd number of scores, the median is the middle score. If there is an even number, the median is a hypothetical score halfway between the two middle scores. To determine the median, the scores must be ordered from smallest to the largest and then you locate the midpoint by inspection e.g. 1, 2, 3, 4, 5, 6, 7, 8, 9. The median score is 5. Also, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, the median score in the 5 plus 6 = 11 divides by 2 = 5.5. Note that when many scores in the distribution are the same, computing the median score becomes a bit complicated.

Mean: This represents the average of a set of scores. The mean is defined as the sum of all scores divided by N (total number of scores). Mean is widely used in both descriptive and inferential statistics. The formula for calculating mean is $\bar{x} = \frac{\sum x}{N}$. Where $\sum x$ means sum, N the total number of scores in the distribution, $\bar{x}$ any score in a series of scores and x the mean. For example, calculate the mean of these numbers. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

$$\bar{x} = \frac{\sum x}{N} = \frac{55}{10} = 5.5$$

To calculate the mean of the data below, You have:

Hours (x)	Frequency (f)
0.0	2
0.5	1
1.0	3
1.5	1
2.0	6
2.5	2
3.0	3
3.5	1
6.0	1

N=20

$$\bar{x} = \frac{\sum x}{N} = \frac{55}{20} = 2.75$$

If the data are contained in a frequency distribution, a slightly different formula is used to calculate the mean:

$$\bar{x} = \frac{\sum fx}{N}$$

In this case, $\bar{x}$ represents the midpoint of any given interval and F is the frequency of that interval.

Hours (x)	Frequency (f)	Fx
0.0	2	0
0.5	1	0.5
1.0	3	3.0
1.5	1	1.5
2.0	6	12.0
2.5	2	5.0
3.0	3	9.0
3.5	1	3.5
6.0	1	6.0

$$\text{Therefore } \bar{x} = \frac{\sum fx}{N} = \frac{40.5}{20} = 2.025$$

The mean is sensitive to extreme scores unlike mode and median. The mean is the only measure of central tendency that can be defined algebraically; this allows it to be used in a wide range of situations. The mean suggests that the data can be calculated at the interval or ratio levels of measurements. In deciding which of the measure to use to report a given set of data, researchers must consider two factors:

- (1) Level of measurement used may determine the choice. If the data are at the nominal level, only the mode is meaningful, but with ordinal data, either the mode or the median may be used. All three measures are appropriate for interval and ratio data.
- (2) The purpose of the statistics is important. If the goal is to describe a set of data, the measure most typical of the distribution should be used. For instance, the scores on an advertising exam are 96, 96, 96, 4, 7, 22. To say that the mean grade is 53.5 does not accurately portray the distribution; the mode would provide a better characteristic description in this case.

Measures of Dispersion: While central tendency determines the

typical score of a distribution, dispersion measures describe the way in which the scores are spread out about this central point. Measures of dispersion can be particularly useful when comparing different distributions. For instance, suppose the average grades for Diploma students and undergraduate students in research methodology are exactly the same. However, the undergraduate class has several excellent and poor students, while the Diploma class is just about average. A measure of dispersion must be employed to reflect this difference. There are several measures of dispersion otherwise called measure of variation. *They include:*

- (1) The range, [2] The variance and [3] The standard deviation

The Range: Is the difference between the highest and lowest score in a distribution of scores. The formula for calculating the range is: $R = X_{Hi} - X_{Lo}$. Where R stand for range, X_{Hi} for highest score and X_{Lo} the lowest score. The range uses only two scores out of the entire distribution. It is not particularly descriptive of the data set and it often increases with sample sizes. The range is seldom use in mass communication research as the sole measure of dispersion. For example, 4, 10, 14, 20, 26, 40, 60, 70, 75, 90, 100. Calculating the range, you have $X_{Hi} - X_{Lo} = 100 - 4 = 96$.

Within the range is another measure called **interquartile range**. Any distribution is possible to be broken into **FOUR** equal parts in terms of distance. Each of the four ways is known as a quartile. The interquartile range is therefore the difference between two quartiles straddling the median value. For instance, let us measure political activism in the present dispensation in Nigeria.

Very high politically active	=	50
High politically active	=	20
Neither nor politically active	=	15

Low politically active	=	10
Very low politically active	=	5

The range is $50 - 5 = 45$

A quartile the therefore is $45/4 = 11.25$

Interquartile is thus: 0, 11.25, 11.25 11.25 11.25 11.25
0 11.25 22.50 33.75 45

The interquartile is 22.50. This is the value that straddles the media value. This may look confusing but it is not. What you are trying to arrive at is the difference between two quartiles that straddles the media value.

0	-----	0
11.25	-----	11.25
22.50	-----	11.25
33.75	-----	11.25
45	-----	11.25

The interquartile is simply 33.75 11.25 = 22.50. Range and interquartile are used for data that can be ranked.

Variance: Provides a mathematical index of the degree to which scores deviate from or are at variance with the mean. A small variance indicates that most of the scores in the distribution lie fairly close to the mean, while a large variance represents scores that are widely scattered. Variance is directly proportional to the degree of dispersion. To compute variance, the step is thus:

- (1) Calculate the mean
- (2) Subtract mean from each score.
- (3) These deviation scores are then squared
- (4) Sum up the square scores
- (5) Divide the sum by N.

The formula is written thus:

$$S^2 = \frac{\sum (x_i - \bar{x})^2}{N}$$

An example of how to calculate variance is:
Assume the cases are: 2, 4, 6, 8 and 10.

The formula is:

$$S^2 = \frac{\sum (x_i - \bar{x})^2}{N}$$

The mean is 30

$$5 = (6)$$

X	X-X	$\frac{(X-X)^2}{N}$
2	2-6(-4)	16
4	4-6(-2)	4
6	6-6(0)	0
8	8-6(2)	4
10	10-6(4)	16
		40

Another formula for calculating variance is:

$$S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}$$

Using the previous cases i.e. 2, 4, 6, 8, 10. You will have

20 scores of 2, 20 scores of 4, 20 scores of 6, 20 scores of 8, and 20 scores of 10. The sum of squares procedure: 20 scores of 4 squared are 16 and summed to give 320. 20 scores of 6 squared are 36 and summed to give 720. 20 scores of 8 squared are 64 and summed to give 1280. 20 scores of 10 squared are 100 and summed to give 2000. The sum of squares is 320 + 720 + 1280 + 2000 = 4320. The sum of squares divided by the number of cases (20) gives the variance: 4320 / 20 = 216. The standard deviation is the square root of the variance: $\sqrt{216} = 14.7$.

$$= 8$$

The second formula is faster and more appropriate if you have fractional data set. If your data set is not fractional, use the first approach. Besides, the second approach can easily be mixed up. Variance is widely used in mass communication research and it is a highly valuable measure of dispersion. It is at the heart of one powerful technique called analysis of variance which is widely used in inferential statistics. Albeit, the inconvenience variance has is that it is expressed in terms of squared deviations from the mean rather than in terms of the original measurements.

Standard Deviation: Standard deviation has solved the above-mentioned problem of variance. It is the positive square root of variance. The formula is: $SD = \sqrt{variance}$. It is written statistically thus:

(1) $SD = \sqrt{\sum (x_i - \bar{x})^2 / N}$
(2) $SD = \sqrt{\sum x_i^2 / N - (\sum x_i)^2 / N^2}$

$$(3) \quad SD = \sqrt{\frac{\sum x^2 - (\sum x)^2}{N}}$$

N

Standard deviation represents a given distance of the scores from the mean of a distribution. For instance, modern intelligence tests (IQ) are constructed to yield a mean of 120 and a standard deviation of 25. Anybody with a score of 145 is one standard deviation above the mean, while anyone with a score of 95 falls one standard deviation below the mean. Similarly, anyone with a score of 70 falls two standard deviation below the mean.

Example of how to calculate standard deviation is:

Assume the cases are 6, 8, 7, 10, 4 and 1.

$$X = 6 + 8 + 7 + 10 + 4 + 1 = 36 \quad = 6\sqrt{36} = 6$$

$$N = 6 \quad x = 6$$

X	f	fx	x x	(x x)2
6	1	6	6 6 (0)	0
8	1	8	8 6 (2)	4
7	1	7	7 6 (1)	1
10	1	10	10 6 (4)	16
4	1	4	4 6 (-2)	4
1	1	1	1 6 (-5)	25
N = 6		36		50

$$SD = \sqrt{\frac{\sum (x - \bar{x})^2}{N}}$$

$$N = \sqrt{50}$$

$$= \sqrt{8.33}$$

$$= 2.886$$

$$3$$

164

The steps for calculating standard deviation is:

- (1) Calculate the mean
- (2) Subtract mean from each score
- (3) Squared these deviation scores
- (4) Sum up the squared scores
- (5) Divide the sum by N
- (6) Find the square root of what you get in 5 above.

A PRIMER ON INFERENTIAL STATISTICS

Researchers rarely study samples just to describe the samples per se (Descriptive statistics). Rather, they make assertions about the larger population from which the sample has been selected. When researchers to this, i.e. make assertions about the larger population from which samples were selected, they engage in inferential statistics. For the mere fact that studying a universe is almost impossible due to the problems earlier discussed in Chapter four. Then, researchers must select a sample. That a sample is selected from a universe is indicative of the fact that the result should be able to be extrapolated to the universe. This example will enliven the above explanation. Assume you want to study mass media habits of students in tertiary institutions in Nigeria and you used the Olabisi Onabanjo students only. The universe is students in tertiary institutions in Nigeria, while Olabisi Onabanjo University (OOU) students are the sample. Even, you cannot use all the students in OOU, you will have to select from among them. Inferential statistics is the statistical methods used to make extrapolations to a universe/population.

The inferential statistical methods commonly used in mass communication research include:

- (1) Chi-square goodness of fit
- (2) The t-test
- (3) Analysis of variance (Anova)
- (4) Regression analysis

- (5) Contingency table analysis
(6) Pearson product moment correlation.

CHI-SQUARE GOODNESS OF FIT

It is often desirable in mass media research to compare the observed frequencies of a phenomenon with the frequencies that might be expected or hypothesized. For example, a researcher who wanted to determine whether the sales of television sets by four manufacturers in the current year are the same as sales for the previous year might advance the following hypothesis: Television set sales of four major manufacturers are significantly different this year from those of the previous year. Suppose the previous year's television set sales were distributed as follows:

Manufacturer	Percent of Sales
ABC	22
Labiz Resources	36
SHARP	19
SANYO	23

From these data, the investigator can calculate the expected frequencies (using a sample of 1,000) for each manufacturer's sales by multiplying the percentage of each sale by 1,000. The expected frequencies are:

Manufacturer	Expected frequency
ABC	220
Labiz Resources	360
SHARP	190
SANYO	230

Next, the researcher surveys a random sample of 1,000 households known to have purchased one of the four manufacturers' in the current year. Assume the data from this survey indicates the following distribution:

Manufacturer	Expected Frequency	Observed Frequency
ABC	220	180
Labiz Resources	360	330
SHARP	190	220
SANYO	230	270

The researcher now must interpret these data in a way that permits a statement of whether the change in frequency is actually significant. This can be done by reducing the data to a **chi-square statistic** and performing a **test known as the chi-square "goodness of fit" test**. A chi-square (X^2) is simply a value showing the relationship between expected and observed frequencies. It is computed by means of the following formula.

$$X^2 = \sum (O - E)^2 / E$$

Where O = the observed frequencies and E = the expected frequencies. This means that the difference between each expected and observed frequency must be squared and then divided by the expected frequency. The sum of the quotients is the chi-square for those frequencies. For the frequency distribution above, chi-square is calculated as follows:

$$X^2 = \sum (O - E)^2 / E$$

E

Where O is the observed frequencies and E is the expected frequencies. This means that the difference between each expected and observed frequency must be squared and then divided by the expected frequencies. The sum of the quotients is the chi-square for those frequencies. For the frequency distribution above, chi-square is calculated as follows:

$$X^2 = \sum (O - E)^2 / E$$

E

$$\begin{aligned}
 &= (O E)^2 + (O E)^2 + (O E)^2 + (O E)^2 \\
 &\quad \begin{array}{cccc} 1 & 1 & 2 & 2 \\ E & E & E & E \end{array} \\
 &= (1801 \ 220)^2 + (330 \ 360)^2 + (220 \ 190)^2 + (270 \ 230)^2 - \\
 &\quad \begin{array}{cccc} 220 & 360 & 190 & 230 \end{array} \\
 &= (-40)^2 + (-30)^2 + (30)^2 + (40)^2 \\
 &\quad \begin{array}{cccc} 220 & 360 & 190 & 230 \end{array} \\
 &= 1,600 + 900 + 900 + 1,600 \\
 &\quad \begin{array}{cccc} 200 & 360 & 190 & 230 \end{array} \\
 &= 7.27 + 2.50 + 4.73 + 6.95 \\
 &= 21.45
 \end{aligned}$$

Once the value of chi-square is known, the goodness of fit test can be performed to determine whether this value represents a significant difference in frequencies. To do this, the researcher must know two more values: the first is the probability level which must be predetermined by the researcher; the second, called degree of freedom (df) is the number of scores in any particular test that are free to vary in value. For example, if one has three unknown values (x, y and z) such that $x + y + z = 10$, there are two degrees of freedom: any two of the three variables may be assigned any value without affecting the total, but the value of the third will then be predetermined. Thus, if $x = 2$ and $y = 5$, z must be 3. In the goodness of fit test, degrees of freedom are expressed in terms of $K - 1$, where K is the number of categories.

In the case of the television sales study, $K = 4$ and $df = 4 - 1 = 3$.

Next, the researcher must consult a chi-square table. These tables are arranged by probability level and degrees of freedom. A portion of the chi-square table relevant to the hypothetical study has been adapted here to show how the table is used:

Table 8.9: A Chi-Square Table

DF	Probability		
	10	.05	.01
1	2.706	3.841	6.635
2	4.605	5.991	9.210
3	6.251	7.815	11.345
4	7.779	9.488	13.277

If the calculated chi-square value equals or exceeds the value found in the table, the differences in frequency are considered to be statistically significant at the predetermined alpha level. If the calculated value is smaller, the results are considered to be non significant.

In the television sales example, suppose the researcher finds a chi-square value of 21.45, with a degree of freedom of 3 and has established a probability level of .05. The chi-square table shows a value of 7.815 at this level when $df = 3$. Since 21.45 is greater than 7.815, the frequency difference is significant and the hypothesis is accepted or supported: television set sales of the four manufacturers are significantly different in the current year from sales in the previous year.

The chi-square goodness of fit test can be used in a variety of ways to measure changes, for example, in studies of audience perceptions of advertising messages over time; in planning changes in television programming; or in analyzing the results of public relations campaigns. Idsvoog and Hoyt (1977) used a chi-

square test to analyze the professionalism and performance of television journalists. The authors were attempting to determine whether 'professionalism' was related to several other characteristics, including the desire to look for employment, educational level and job satisfaction. The results indicated that journalists classified on the basis of questionnaire responses differed significantly from those classified as 'medium' or low' professionals.

There are limitations to the use of the goodness of fit test, however. Since this is a nonparametric statistical procedure, the variables must be measured at the nominal or ordinal level. The categories must be mutually exclusive and each observation in each category must be independent from all others. Additionally, because the chi-square distribution square is sharply skewed for small samples Type II error may occur. Small samples may not produce significant results in cases that could have yielded significant results if a larger sample had been used. To avoid this problem, most researchers suggest that each category contain at least five observations. As an alternative to the chi-square goodness of fit test, many researchers prefer the Kolomogorov Smirnov test, which is considered to be more powerful than the chi-square approach. In addition, a minimum number of expected frequencies in each cell are not required as in the chi-square test. (See Winkler and Hays 1975, for more information about the Kolomogorov-Smirnov test).

CONTINGENCY TABLE ANALYSIS

Another nonparametric statistical test that is often used in mass media research is the contingency table analysis, frequently called cross-tabulation or simply cross-tabs. Cross-tabs analysis is basically an extension of the goodness of fit test, the primary difference being that two or more variables can be tested simultaneously. Consider a study to determine the relationship

between a person's sex and his or her media usage habits with regard to obtaining information on new products. Suppose the researcher selects a random sample of 210 adults and obtains the information displayed in Figure 8.3

Fig. 8.3 Description of Random Sample of Media Users in Study of Sources of New Product Information

Media Most Used for New Product Information

Sex	Radio		Newspapers		Television	
	Male	Female	Male	Female	Male	Female
Male	3	18	26	31	71	61
Female						

Source: Wimmer and Dominick 1987:264.

The next step is to calculate the expected frequencies for each cell. This procedure is similar to that used in the goodness of fit test, but it involves a slightly more detailed formula.

$$E_{ij} = \frac{R_i C_j}{N}$$

Where E_{ij} expected frequency for cell in row i , column j ; R_i = sum of frequencies in row i ; C_j = sum of frequencies in column j ; and N = sum of frequencies for all cells. Using this formula, the researcher in the hypothetical example can calculate the expected frequencies as follows:

$$\begin{aligned} \text{Male/radio} &= 100 \times 21 = 2,100 = 10 \\ 210 \quad 210 \\ \text{Female/radio} &= 110 \times 21 = 2,310 = 11 \\ 210 \quad 210 \end{aligned}$$

Each expected frequency is placed in a small square in the upper right-hand corner of the appropriate cell, as illustrated in Figure 8.3. After the expected frequencies have been calculated, the investigator must compute the chi-square, using the following formula:

$$\chi^2 = \sum (O - E)^2$$

E

Using the same example:

$$\begin{aligned} \chi^2 &= (3 - 10)^2 + (26 - 27)^2 + (71 - 63)^2 \\ &\quad + (18 - 11)^2 + (31 - 30)^2 + (61 - 69)^2 \\ &\quad + (49 - 1)^2 + (64 - 46)^2 + (1 - 64)^2 \\ &\quad + (10 - 27)^2 + (63 - 11)^2 + (30 - 69)^2 \\ &= 4.90 + 0.04 + 1.01 + 4.45 + 0.03 + 0.92 \\ &= 11.35. \end{aligned}$$

To determine statistical significance, the researcher must now consult the chi-square table. In a cross tab analysis, the degrees of freedom are expressed as (R - 1)(C - 1), where R is the number of rows and C the number of columns. Assuming that $p \leq 0.05$, the chi-square value is listed as 5.991, which is lower than the calculated value of 11.35. Thus, there is a significant relationship between the sex of the respondent and the media used to acquire new product information. The test indicates that the two variables are somehow related, but it does not tell exactly how. To find this out, it is necessary to go back and examine the original cross tab data

(Figure 8.3). Looking at the distribution, it is easy to see that females use radio more and television less than do males.

In the case of a 2 x 2 cross tab (where $df=1$), computational effort is saved when the corresponding cells are represented by the letters A, B, C and D, such as:

A	B
C	D

The following formula can then be used to compute the chi-square.

$$\chi^2 = \frac{N(AD - BC)^2}{(A+B)(C+D)(A+C)(B+D)}$$

Crosstab analysis has become a widely used statistical technique in mass media research, especially since the development of computer programs such as the Statistical Package for the Social Sciences (SPSS-X). In addition to chi-square, various other statistics can be used in crosstabs to determine whether the variables are statistically independent, alternatively, data summarized a variety of measures of association (see Nie et. al., 1975).

The t-Test

In many research studies, two groups of subjects are tested: one group receives some type of treatment and the other serves as the control. After the treatment has been administered, both groups are tested and the results are compared to determine whether a statistically significant difference exists between the groups. That is, did the treatment have an effect on the results of the test? In cases such as this, the mean score for each group is compared through the use of a t-test. The t-test is the most

elementary method for comparing two groups mean scores. A variety of t-test alternatives are available, depending on the problem under consideration and the situation of a particular research study. Variations of the t-test are available for testing independent groups, related groups and cases in which the population mean is either known or unknown (See Champion, 1981, Roscoe, 1975).

The t-test assumes that the variables in the populations from which the samples are drawn are normally distributed. The test also assumes that the populations have homogeneity of variance, that is, they deviate equally from the mean. The basic formula for the t-test is relatively simple. The numerator of the formula is the difference between the sample mean and the hypothesized population mean. The denominator is the estimate of the standard error of the means (Sm):

$$T = \frac{\bar{X} - \mu}{\text{Sm}}$$

Where

$$\text{Sm} = \sqrt{\frac{SS}{n}} \quad \text{and} \quad SS = \sum (X - \bar{X})^2$$

One of the more popular forms of the t-test is the test for independent groups or means. This procedure is used in studying two independent groups for differences (the type of study described at the beginning of this section). The formula for the independent t-test is:

$$T = \frac{\bar{X}_1 - \bar{X}_2}{\text{Sm}_x}$$

Where $\bar{X}$ = the mean for Group 1, $\bar{X}_2$, the mean for Group 2 and Sm_x = the standard error for the groups. The standard error is an important part of the t-test formula and is computed as follows:

$$\text{Sm}_x = \sqrt{\frac{SS_1 + SS_2}{n_1 + n_2}}$$

$$\text{SS}_1 = \sum (X_1 - \bar{X}_1)^2$$

Where SS_1 = the sum of squares for Group 1, SS_2 = the sum of squares for Group 2, N_1 = the sample size for Group 1 and N_2 = the sample size for Group 2.

To illustrate a t-test, imagine a research problem to determine the recall of two groups of subjects with regard to a television commercial for a new household cleaner. One group consists of 10 males and the other consists of 10 females. Each group views the commercial once and then completes a 15-item questionnaire. The hypothesis predicts a significant difference between the recall scores of males and females. The following data were collected.

Female Recall Scores

X	x	x ² (SS)
4	-4	16
4	-4	16
5	-3	9
7	-1	1
7	-1	1
8	0	0
9	1	1
9	1	1
12	4	16
15	7	49
80		110

X equal 8

Male Recall Scores

X	x	x ² (SS)
2	-4	16
3	-3	9
4	-2	4
4	-2	4
4	-2	4
6	0	0
6	0	0
8	2	4
10	4	16
13	7	49
60		106

$$X = 6$$

Using the t-test formula, the next step is to compute the standard error for the groups by using the previous formula:

$$SX X = \sqrt{(110 + 106) \left(\frac{1}{10} + \frac{1}{10} \right)}$$

$$= 1.55$$

Table 8.10: Portion of the t-Distribution Table for the Two-tailed Test

Probability				
N	10	.05	.01	0.001
1	6.314	12.706	63.657	636.619
2	2.920	4.303	9.925	31.598
*				
*				
17	1.740	2.110	2.898	3.965
18	1.734	2.101	2.878	3.992
19	1.729	2.093	2.861	3.883

For purposes of the t-test, degrees of freedom are equal to $N1 + N2 - 2$, where $N1$ and $N2$ represent the sizes of the respective groups. In the example of advertising recall, $df = 18 (10 + 10 - 2)$. If the problem is tested at the .05 level of significance, a t value of 2.101 is required for the study to be considered statistically significant. However, since the sample problem is a two-tailed test (the hypothesis predicts only a difference between the two groups, not that one particular group will have the higher mean score), the required values are actually $t < -2.101$ and $t > 2.101$. The conclusion of the hypothesis problem is that there is no significant difference between the recall scores of the female group and the recall scores of the male group, since t does not equal or exceed these values.

There are numerous examples of the t-test in mass media research that demonstrate the versatility of the method. For example, Garramone (1985) investigated political advertising by exploring the roles of the commercial sponsor (the source of the message) and the rebuttal commercial (a message that charges as false the claimed another commercial). Among six separate hypotheses that were tested, Garramone predicted that:

H1 Viewers of a negative political commercial will perceive an independent commercial as more trustworthy than a candidate sponsor.

H2 Viewers of an independent commercial opposing a candidate will demonstrate a more negative perception of the target's image
b. a lesser likelihood of voting for the target than viewers of a candidate commercial.

H3 Viewers of an independent commercial opposing a candidate will demonstrate:
a. a more positive perception of the targets opponent

b. a greater likelihood of voting for the target's opponent than viewers of a candidate commercial.

Among other findings, Garramone concluded that:

The first hypothesis... was not supported. (However), hypotheses 2 and 3 ... were supported. Viewers of an independent commercial opposing a candidate demonstrated a more negative perception of the target's image, $t(110) = 2.41$, $p \leq .01$ and a lesser likelihood of voting for the target, $t(110) = 1.89$, $p \leq .05$, than did viewers of a candidate commercial. Also as predicted, viewers of an independent commercial demonstrated a more positive perception of the target's opponent, $t(110) = 1.89$, $p < .05$ and a greater likelihood of voting for the target's opponent, $t(110) = 2.45$, $p < .01$, than did viewers of a candidate commercial.

ANALYSIS OF VARIANCE

In many situations, researchers must investigate differences between more than two groups of subjects. In addition, researchers sometimes want to measure the effects of different degrees or levels of an independent variable. A t-test in these cases would not be adequate; what is required is an analysis of variance (ANOVA).

ANOVA is essentially an extension of the t-test. In fact, the two-sample ANOVA is mathematically equivalent to the t-test. The advantage of ANOVA is that it can also be used in factorial designs, that is, research involving simultaneous analysis of two or more independent variables or factors. An ANOVA is classified according to the number of factors involved in the analysis: a one-way ANOVA investigates one independent variable; a two-way ANOVA investigates two independent variables and so on. Also, several levels of any independent

variable may be analyzed. Thus, a 2 x 2 ANOVA studies two independent variables, each with two levels.

ANOVA is a versatile statistic that is widely used in mass media research. The name of the statistic is somewhat misleading, however, because the most common form of ANOVA tests for significant differences between two or more group means and nothing to do with the analysis of differences of variance. Additionally, ANOVA breaks down the total variability of a set of data into its component *sources of variation*; that is, "explains" the variation in a set of scores on one or more independent variables. ANOVA identifies or explains two types of variance: **systematic and error**. Systematic variance in data is attributable to a known factor that predictably increases or decreases all the scores it influences. One such factor common identified in mass media research is sex: often an increase or decrease in a given score can be predicted simply by determining whether a subject is male or female. Error variance in data is created by an unknown factor that most likely has not been examined or controlled in the study. A primary goal of all research is to eliminate or control as much error variance as possible.

The ANOVA model assumes: (1) that each sample is normally distributed, (2) that variances for each group are equal, (3) that the subjects are randomly selected from the population and (4) that the scores are statistically independent. They have no concomitant relationship with any other variables or score. The ANOVA procedure begins with the selection of two or more random samples. Samples may be the same or different population. Each group is subject to different experimental treatments, followed by some type of test or measurement. The scores from the measurements are then used to calculate a ratio of variance, known as the F ratio (F).

To understand this calculation, it is necessary to examine in greater detail the procedure known as sum of squares. In the sum of squares procedure, raw scores or deviation scores are squared and summed, to eliminate the need for dealing with negative numbers. The squaring process does not change the meaning of the data as long as the same procedure is used on all the data; it simply converts the data into a more easily interpreted set of scores. In ANOVA, sums of squares are computed *between groups* (of subjects), *within groups* (of subjects), and *in total* (the sum of the between and within figures). The sums of squares between groups and within groups are divided by their respective degrees of freedom (as will be illustrated) to obtain a *mean square*: mean squares between (MSb) and mean squares within (MSw). The F ratio is then calculated using the following formula:

$$F = \frac{MSb}{MSw}$$

Where MSb df = K - 1, MSw df = N - K, K = the number of groups and N = the total sample. The F ratio derived from the data is then compared to the value in the F distribution table that corresponds to the appropriate degrees of freedom and the desired probability level. If the calculated value equals or exceeds the tabled value, the ANOVA is considered to be statistically significant. The F table is similar to the stable ANOVA chi-square table except that two different degrees of freedom are used, one for the numerator of the F ratio and one for the denominator.

The ANOVA statistic can be demonstrated by using an example from advertising. Suppose that three groups of five subjects each are randomly selected to determine the credibility of a newspaper advertisement for a new laundry detergent. The groups are exposed to versions of the advertisement that reflect varying degrees of design complexity; easy, medium and difficult. The

subjects are then asked to rate the advertisement on a scale of 1 to 10, with 10 indicating **believable** and 1 indicating **not believable**. The null hypothesis is advanced: There is no significant difference in credibility among the three versions of the advertisement.

To test this hypothesis, the researchers must first calculate the three sums of squares: total, within and between. The formulas for sums of squares (SS) are:

$$\begin{aligned} \text{Total } u &= \sum X^2 - \frac{(\sum X)^2}{N} \\ \text{Within } u &= \sum X^2 - \frac{\sum (\sum X)^2}{N} \\ \text{Between } u &= T_u - W_u \end{aligned}$$

The scores for the three groups furnish the following data.

Group A (Easy)	Group B (Medium)	Group C (Difficult)
2	2	2
X	X	X
1	4	6
2	5	7
4	6	7
4	6	8
5	8	10
16	29	38
$\sum X = 83$	$\sum X = 16 + 29 + 38$	
2		
$\sum X^2 = 537$	$\sum X^2 = 62 + 177 + 298$	

Figure 8.4: Values for one-way ANOVA example

Sources of variation	df	Sums of squares	Mean square	F
Between groups	2 (K - 1)	49	24.50	10.19
Within groups	12 (N - K)	28.8	2.4	xxxx
Total	14 (N - 1)	77.8	xxxx	

By inserting the figures so obtained in the formulas, researchers are able to calculate the sums of squares as follows:

$$\begin{aligned} T_u &= \sum X^2 - \frac{(\sum X)^2}{N} = 537 - \frac{(83)^2}{14} = 537 - 499.2 = 37.8 \\ W_u &= \sum X^2 - \frac{\sum (\sum X)^2}{N} = 537 - \frac{62 + 177 + 298}{2} = 537 - 508.2 = 28.8 \end{aligned}$$

$$\begin{aligned} W_u &= \sum X^2 - \frac{\sum (\sum X)^2}{N} = 537 - \frac{62 + 177 + 298}{2} = 537 - 508.2 = 28.8 \\ B_u &= T_u - W_u = 37.8 - 28.8 = 9 \end{aligned}$$

With this information, the research team can deduce the mean squares between and within groups (SS df), which can be divided into (MSb MSw) to obtain the value of the F ratio. These results are displayed in Figure 8.4.

QUESTIONS FOR REVIEW

- (1) Enumerate and examine the **Two** types of statistics used

in mass communication research?

(2) Find the mean, variance and standard deviation for the following frequency distribution?

X	F
1	2
4	3
6	4
5	5
8	3

(3) Designs a mass communication study for which a chi-square analysis is appropriate?

CHAPTER 9

DOCUMENTATION IN RESEARCH

Documentation is the generally accepted way(s) to give credit to the people whose works you consulted. Ideas, concepts, facts and opinions belong to no one, therefore, are not protected by copyright Laws. But the ways ideas, concepts, facts and opinions are expressed are properties of someone or people who expressed the ideas and are protected by copyright Laws. To avoid being embarrassed or sued, writers and authors must acknowledge works consulted. Failure to acknowledge works consulted is a crime in the academic community. This crime labeled, **PLAGIARISM** (i.e. presenting someone's work, published or not, as your own) is heavily penalized in the academic community. Thus, to avoid embarrassment, it is honorable for you as a researcher to acknowledge another person's work used.

Knowledge is cumulative. When you provide information about your sources, it bestows credibility on you and the facts and opinions presented gain credibility. It does not matter whether you used the work verbatim, or you paraphrased, what matter is you must give credit to the person or people whose works you consulted. The works could be books, newspapers, magazines, articles in journals, articles in books, tables, charts, diagrams, song lyrics, song rhythms, unpublished materials, scripted dialogue, etc.

Sometimes, depending on what you are using the material for, you may seek permission from the author to use his work. If you intend to use the material for teaching, scholarship or even for research purpose, you may not need to seek permission, but you must give details about the author, such as names of author, year of publications, publisher's name, country or state where the material was published etc. There are many methods to document sources. These include: (1) Footnotes (2) Endnotes (3) References and (4) Bibliography.

FOOTNOTES and ENDNOTES: Footnotes and endnotes are written in the same way. The difference between them is: footnotes appear at the bottom of a page; endnotes appear at the end of a chapter. Both are indicated by Arabic numerals superscript in the text where they have been used and the same Arabic numeral is used to represent it (them) at the bottom of the page or at the end of the chapter. The numeral must be serial, i.e. what was "1" in the text, must be "1" at the bottom or at the end of the chapter, same for "2", "3", "4", "5" etc.

Both are written thus: The forename is written first; followed by the surname; the year of publication, the title of the work used (italicized), publisher of the work; and page in the work you used. Footnotes and endnotes are usually indented four or five spaces to the left. Every word must begin with a capital letter. If the work consulted is authored by three or more authors, write the first author's name followed by et.al. meaning (and others). If the work was edited or compiled, the name of the editor or compiler is followed by the abbreviation comp., ed, or trans., for translator. Do not forget to write the edition of the work used if it has it. Examples include:

Joseph Ojo and Mathew Otojagha (1998), *English Grammar and Usage*, Lagos: John West Publishers Page 400, 2nd Edition.

There are cases in which only endnotes are used and these endnotes do not appear at the end of each chapter, rather, they appear at the end of the book, i.e. a section is devoted to all the endnotes used. The section is however organized chapter by chapter with chapter headings to show where the notes of particular chapter begin and ends.

Periodicals. A footnote or endnote referring to an article in a periodical should include all the following information that is relevant.

(1) Author's name (2) Title of the article enclosed in quotation marks. Capitalized every first word followed by a comma that is place inside the quotation marks. (3) Name of the periodical is written in italics (4) Volume and the number of the periodical must be included (5) The issue date is a must (6) Page number used is also a must.

Examples are:

- (1) Thompson Nwigwe (1998), "The Lord's Prayer", *Nigerian Philosophical Monthly*, Volume 2 Number 4, Pp.220-240.
- (2) Tony Madu (1998), "Telepathy and Clairvoyance," *Unilag Philosophical Digest*, Volume 6, Number 2, Pp 100-180.
- (3) Adepoju Tejumaiye (2002), "Strengthening Employee and Employer Relationship: A Public Relations Perspective", *Babcock Journal of Management and Social Sciences*, Volume 1, Number 1, Pp 24-36.

Unpublished Materials: Sometimes you make use of materials that are unpublished, i.e. materials not formally published. These materials may include projects, thesis/dissertations, handouts, letters, notes etc. That these materials are not published do not mean you do not give credit to those who produced them. As of fact, copyright laws covered them. A footnote or endnote

referring to a work that is unpublished should include as many of the elements as are known and as are relevant:

- (1) Author's name
- (2) Title of the work enclosed in quotation marks
- (3) Nature of the material i.e. a description of the document e.g. letter, projects, thesis etc.
- (4) The date of the material if known.
- (5) Folio or identification number i.e. whatever kind of identification number is conventionally used with the material.
- (6) Geographical location of the material i.e. the name of institution where the materials can be found and the city, state and country where the institution is located.

Example include:

Adepoju Tejunaiye (1997), "The Role of Humour in Advertising: A case study of Gold Circle Condom and Bago Super Sack TV Commercials", An Unpublished M.Sc. Dissertation, Submitted to the Department of Mass Communication, University of Lagos.

Style and content for subsequent Documentation

Sometimes the same work used earlier is used again and again and again, thus, the need to repeat often the same work. The work could be a book, an article, journal articles, even, unpublished materials. The are two approaches that are in use, the approaches are:

- (1) Latin Abbreviations
- (2) Shortened footnote styling

Latin Abbreviations: The use of Latin abbreviations is the traditional technique used in subsequent references. The Latin abbreviations used are:

- (1) *Ibid.* meaning *Ibidem* in the same place.

- (2) *Op. Cit.* meaning *Opere Citato* in the work cited
- (3) *Loc. Cit.* meaning *Loco Citato* in the place cited

The three are used as space savers in repeated references to sources cited earlier. Current usage indicates that these abbreviations need no longer be typed with underscoring or italicized in type. Also, when a page reference follows one of these abbreviations, it may or may not be set of with a comma. E.g. *Ibid* Pp 60-80. These Latin abbreviations are capitalized when they appear at the beginning of a footnote or endnote, but not otherwise. The Latin abbreviation *Ibid* is used when the writer is referring to the work cited in the immediate preceding note. The abbreviation may be used as many times as possible in succession. For instance, the first reference is:

Olugbenga Kalejaiye (2003), *Advertising Copywriting in the Twenty-first Century*, Ikeja: Rightway Communication, Second Edition, P. 140.

If the next reference is the same book and the same page, it is written thus: *Ibid*. However, when *Ibid* is written without page number, it indicates that the same page of the same source is being cited as in the footnote or endnote immediately preceding. Also, if the same book is being cited, but the edition and year of publication differ, you have: *Ibid*, followed by the page, edition and year of publication.

Op city and Loc cit are used only in conjunction with the author's name which may occur in the running text or at the beginning of the first reference. When you cite a book or a periodical, its complete title, author's name etc should be included the first time it is referred to in a footnote or endnote. But in subsequent reference, *Loc. Cit.* or *Op. cit* with or without page numbers may be substituted for the title. *Op cit* and *Loc cit* are used after other intervening works have been used. For instance, if the first work

used belongs to Dare Ayodele, the second, belong to Chukwu Paschal, the third belong to Dare Ayodele again, then you use Op cit., or Loc cit. The difference between the two (Op cit and Loc cit) is that Loc cit is used only when referring to the same page or pages of the same source cited earlier, while Op cit is used to refer to a source cited earlier but not to the same page or pages of that source.

For instance, the first reference may be:

Kolade Ajilore (1999), *Advertising in Nigeria*, Akoka: Unilag Press, Pp 40-65.

Repeated reference with other notes intervening will be written thus: Ajilore (1999) Loc cit.,

You will only make use of Op cit, if the page or pages in the first reference differs. It is written thus: Ajilore (1999) Op cit., pp.69-72.

NB: ALBEIT, THE APPROACH DESCRIBED ABOVE IS OLD AND IT IS NO LONGER IN USE

The second approach (**shortened footnotes styling**) is used thus:

(1) If the author's name occurs in the running text, it needs the first one. For instance, the first reference may be:

Segun Ayoola (2002), *History of Nigeria*, Ibadan: Onibonoje Press, p.98

Repeated reference will be:
History of Nigeria p. 100

(2) If the author's name does not appear in the running

text prior to a repeated reference. You could write it this way:

Ayoola, *History of Nigeria* P. 100

OR

Ayoola, P.100

(3) In repeated reference to books by more than one author, the authors names may be shortened, e.g. the first reference is:

Leo Anamasopye and Segun Ayoola (2003), *History of Nigeria from 1914 to 2003*, Akoka: Unilag press p. 126.

Repeated reference will be written thus:

Anamasonye and Ayoola (2003), *History of Nigeria from 1914 to 2003*, P.126

OR

Anamasonye and Ayoola (2003), P.126.

(4) A long title may be shortened if has already been given in full in an earlier footnote or endnote. For instance, the above example could be written this way.

Anamasonye and Ayoola (2003), *History of Nigeria*, P126.

(5) A shortened reference to an article in a periodical that has been cited earlier should include the authors last name, the title of the article, which can be shortened if it is long, and if no similar title by the same author is being cited and the page number. E.g.

Tejumaibe (2002), "Strengthening employee and employer Relationship", p.24.

REFERENCE: Is another mode of documenting sources in scholarly works. It is written thus:

- (1) Surname first, followed by the forenames
 - (2) Title of work used in *Italics*.
 - (3) City/state of publisher, and name of publisher
 - (4) Year of publication.
 - (5) Edition
 - (6) No flushing left or right, it is written straight.
- Examples are:

- (1) Okonji, George (1999), *Nigerian Police in the New Millennium*, Onitsha: Oko I Books 2nd Edition
- (2) Ejemai, Ohifeme (1999), *Nigerian Soldier: A Curse or Blessing to Nigeria?* Bayelsa: Jack Press, 3rd Edition.

Some of the conditions earlier mentioned for footnotes and endnotes are applicable to reference. They include:

- (1) If the work was edited, translated of compiled, you have ed, tran., comp., beside the author's name.
- (2) The title of the work is written in *Italics*.
- (3) If the work is a periodical, enclosed the title of the work in quotation marks, etc.

BIBLIOGRAPHY: While bibliography lists all the works a writer has found relevant in writing the text. Lists of references include only those works that are specially mentioned in the text or from which a particular quotation or piece of information was taken. They appear at the end of an article, chapter, or a book where they list sources of information that are relevant to the text.

Generally, bibliographical styling used in the sciences differs from those used in general writing. For instance, in the sciences, the following among others are what is obtainable:

1. The author's first and middle names are expressed with initials only.
2. The date is placed near the beginning instead of at the end of the entry.
3. Less capitalization is used.
4. Titles of articles are not enclosed in quotation marks.
5. Book titles are not underlined or italicized.

Nevertheless, writing bibliography in the humanities involves the following:

1. Author's surname comes first.
2. Title of the work is underlined or italicized.
3. The second line is flushed four or five spaces to the right.
4. No page is written.
5. Name of publisher, his address and location are written.
6. Year and date of publication.
7. Edition of the work
8. Portion of the book, if it contains many works.

Bibliography comes at the end of your work and it is alphabetically arranged. Bibliography is all the works you found relevant in writing whatever you are writing. This includes: books, periodicals, letters, unpublished materials etc. The underlisted are examples of how bibliography is written. There are two examples in each case. While the first examples are obtainable in the humanities and general publications; the second represents styles used in the social and natural science. Bibliographies are always typed beginning on a new page.

(A) Book with a single author

- (1) Tejumaibe, J. A [1969], **The Press**, Lagos: Akoka Press.

(B) Book with two authors

- (1) Tejumaiye, Adepoju and Ayoola, Segun [2003], **History of Nigeria from 1914 to 2003**, Akoka: Unilag Press.
 - (2) Tejumaiye, A and Ayoola, S (2003) **History of Nigeria from 1914 to 2003**, Akoka: Unilag Press.
- (C) Book with three or more than three authors**
- (1) Ajilore, K et.al [2003], **Principles of Advertising**, Lagos: Olusola and Co.
 - (2) Ajilore, K, Tejumaiye, A., Kalejaiye, O. (2003), **Principles of Advertising**. Surulere: Olusola and Co.

(D) Book with a corporate author

- (1) Nigerian Institute of Journalism [2001]. **An introduction to Journalism**, Ikeja: John West Publishers.

(E) Book with editor listed and no author

- (1) Anamasonye, Leo (ed) [1973], **History of Nigerian Press**, Akoka: Alaroye press.
- (2) Anamasonye, Leo, Tejumaiye, A (ed) [1973], **History of Nigerian press**, Akoka: Alaroye Press.

(F) Book with editor and translator

- (1) Kalejaiye, Olu Benga [ed] [1999], **Public Relations in Search of Excellence**, Akoka, Unilag Press.
- [2] Kalejaiye, O. [Trans] (1999), **Public Relations in search of Excellence**, Akoka: Unilag Press.

PERIODICALS: A bibliographical entry for an article in Journals, newspapers etc includes the under listed as are relevant.

- (1) Authors name
- (2) Title of the article is enclosed in quotation marks with a period before the closing quotation mark.
- (3) Name of the periodical is underlined or italicized
- (4) Volume and number of the periodical e.g. volume 4, number 2. This information comes after the name of the periodical.
- (5) Issue date i.e. daily, weekly, monthly, per semester, per session etc.
- (6) Page numbers or section number or edition identification number.

Examples are:

(A) Article in Journal with continuous pagination of volume

- i. Tejumaiye, Joseph (1999) "Seeing is believing", **Babcock Philosophical Review** 4: 230 245.
- ii. Tejumaiye, J. (1999), "Seeing is Believing", **Babcock Philosophical Review** 4 230 245.
- (B) Article in newspaper**
- (1) Olusola, Dayo [1999], "ASUU: The Solution to Nigerian Universities", **Sunday Concord** 23rd Oct., P.8.

UNPUBLISHED MATERIALS: Bibliographical entries for unpublished materials include as many of the following elements as are known and as are relevant:

- (1) Author's name
- (2) Title of the work
- (3) The nature of the material i.e. the description of the material such as thesis, letters etc.

-
- (4) Date of the document
 - (5) Geographical location i.e. the name of the institution and the city where the material can be located are often listed last.
-

Examples are:

[1] Taiwo, Anthony [1979], **The image of the Nigerian Police**, A research work Submitted for an Award of Bachelor of Science (B. Sc) Degree in the Faculty of Social Sciences, University of Jos, Plateau State.

(2) Oyakhilome Frank [1999], Book Publishing in Nigeria. An unpublished Book of Reading.

N.B: The mode of documentations discussed represents general system. Some disciplines do own styles slightly different from what was discussed. Also it is important to always consults the APA referencing manual for updates as the mode of documenting sources changes with time.

QUESTIONS FOR REVIEW

- (1) Why the need to document sources in research.
 - (2) Name and examine TWO ways to documenting sources in research.
 - (3) Examine the TWO styles for subsequent documentation of sources in footnotes/endnotes.
-

CHAPTER 10

RESEARCH PROCESS AND RESEARCH THESIS/DISSERTATION

A process is a series of activities leading to a goal. For instance, a house is a process comprising the purchase of land, surveying of the land, drawing of plans by architect, implementation of the plans by architects/builders i.e. the digging of land for foundation, the foundation itself, erecting blocks, fixing windows, fixing doors, roofing, ceilings, toilets, bathrooms, plastering, paintings, fittings etc. After all the aforementioned among others have been done, it is now called a house. Similarly, the shirt, trouser, *buba*, skirt etc that you wear is initially a seed, the seed becomes cotton tree, the cotton is plucked off the tree and processed into thread, the thread is knitted into cloth or fabric, the cloth or fabric is cut into sizes and turned into shirts, trouser etc. by tailors. In all, a process is an interconnected activity towards the realization of a goal.

Research is a process which comprises thinking about what to study or observing phenomenon to study, conceptualizing what to study, breaking the concepts to variables, doing a critical delineation of problems of study, reducing the variables to objectives to pursue and research questions, hypotheses. Others include: a critical examination of previous studies in the area you are studying, designing the study, proposed method to adopt,

population of study, sampling, gathering data, analysing data, findings, conclusions, recommendations and suggestions for further studies.

Uyo (2002:82) defined the research process as a series of activities that are moving ahead over time toward a purpose. He asserted that an analysis of these activities shows that they derive essentially from the steps of the scientific method. While the steps of the scientific method vary from author to author, the various formulations are identical. The same can be said of the research process, i.e. the formulations of the steps vary from author to author, but they are quite identical: Table 10.1 shows the steps of the scientific method, while table 10.2 shows that of the research process (Uyo 2002:83).

Table 10.1 Comparison of Steps of Research Methods

	Gopal (1964)	Ary, Jacobs and Razavieh (1972)
(1) Observation		(1) Definition of the problem
(2) Hypotheses formulation		(2) Statement of hypothesis
(3) Verification		(3) Deductive reasoning
		(4) Collection and analysis of data
		(5) Confirming or rejecting hypothesis
Koul (1964)		
(1) Identification and definition of the problem		
(2) Formulation of a hypothesis		
(3) Implications of hypothesis through deductive reasoning.		
(4) Collection and analysis of evidence.		
(5) Verification rejection or modification of hypothesis.		

Table 10.2 Illustration of the Steps of the Research Process

	Robinson (1969)	Biesanz and Biesanz (1978)
(1) Stating the problem		(1) Choice of a problem
(2) Delimiting the problem		(2) Formulation of hypothesis
(3) Establishing definition		(3) Research design
(4) Searching literature		(4) Data collection
(5) Developing hypotheses		(5) Analysis of data
(6) Deciding study design		(6) Interpretation
(7) Obtaining data		(7) Publication
(8) Analysing data		
(9) Drawing implications and generalizations.		
	Ary, Jacobs and Razaieh (1972)	Churchhill (1977)
(1) Selecting the problem		(1) Problem formulation
(2) Analysis of problem		(2) Research design
(3) Selecting research strategy		(3) Determination of data
method of		
(4) Collecting and interpreting data		(4) Collection and design of data
(5) Reporting the result/collection of forms		
(6) Sample design and data collection		
(7) Interpretation of data		
(8) Preparation of research report.		

Wimmer and Dominick (1987:12) Outlined the Steps in the Research Process thus:

- (1) Select a problem
- (2) Review existing research and theory (relevant)
- (3) Develop hypotheses or research questions.
- (4) Determine an appropriate methodology/research design
- (5) Collect relevant data
- (6) Analyse and interprets the results

- (7) Present the result in appropriate form
- (8) Replicate the study (when necessary).

Having earlier defined a process, it is apparent that each step in the eight-step research process depends on all the other steps in order to produce good results. Naturally, searches for scientific knowledge begins with a problem as observed or perceived by the researcher. Before a literature search is done, a clearly articulated way to investigate a problem, the researcher must know what types of studies have been conducted, etc. The conclusion arrived at is not independent of the methodology, the mode of data collection, the problem and of course the literature review. So all the steps in the process are interactive. Note that step two and optional in Wimmer and Dominick model of the research process are (Private sector research) is conducted to answer specific and unique question or problem for future decisions. In such cases, there may be no previous research to consult and there is hardly any reason to replicate such study because a decision will be made on the basis of the first analysis. Such applied research may be problem(s) facing an organization, such as: decline in sales; the best way to produce goods at least cost; Satanism case of Procter and Gamble is a good example.

In all, no matter how the research process model is outlined or given, the central feature is the same. For instance, all the outlined models can be reduced into a FIVE step research process model. As of fact, these five steps are what is generally used in the humanities and the social sciences. The steps (five-one; two and three in Robinson's (1969) research process model can be incorporated into one step. The same can be done for other research process models as well. Thus, the five steps in common use are:

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- (1) Introduction
- (2) Literature Review
- (3) Methodology
- (4) Data analysis and Discussion
- (5) Conclusion

SPECIMEN OF A COMPLETED PROJECT/DISSERTATION/THESIS

There is no hard and fast rule on how to go about the component parts of your project/dissertation/thesis. What you must endeavor to do is to let the purpose of your work guide you. Also, ensure there is sequence and harmony between and among the component parts i.e. logical presentation of ideas, imploring the parsimonious principle. The specimen below is by no means the best, but like all model, it is a good guide. There is no must used title for each of the chapters (1 to 5). As of fact, each chapter has alternative titles.

- (i) Certification page
- (ii) Dedication page
- (iii) Acknowledgement page
- (iv) Abstract page
- (v) Table of contents page
- (vi) List of Tables (if any) page
- (vii) List of figures (if any) page

Chapter One: Introduction

- (A) Background to the study
- (B) Statement of the problem
- (C) Objectives of the study
- (D) Research questions and or hypotheses
- (E) Scope of study

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- (F) Significance of study
(G) Definition of Terms or Operational Definitions
References

Chapter Two: Literature Review

- (A) Introduction
(B) Conceptual Review
(C) Theoretical Review
(D) Research or Empirical Review
References

Chapter Three: Methodology

- (A) Introduction
(B) Methodology and why
(C) Population of study
(D) Sampling plan (sample unit, sample size and sample procedure)
(E) Data collection instrument
(F) Data analysis approach
References

Chapter Four: Data Analysis and Discussion

- (A) Analyse your findings
(B) Discuss your findings
References

Chapter Five: Conclusion

- (A) Introduction Recap of earlier chapters (summary)
(B) Findings
(C) Conclusion
(D) Recommendations of study
(E) Suggestions for further study
(F) Limitations of study

Other component parts of a completed project/dissertation/thesis

after chapter five are:

- (1) Bibliography
(2) Appendix(es)

ANALYSIS OF THE COMPONENT PARTS OF A PROJECT/DISSERTATION/THESIS

Certification page: This page in most cases is a paragraph that gives description of your work i.e. the paragraph tells whether what you did is a certificate, diploma, degree or post graduate degree, and that you did it in partial fulfillment of your certificate, diploma, degree, or post graduate degree, Beneath the paragraph is the part that contains the column for signature of approval and date of your supervisor, column for signature of approval and date of external assessor and column for signature of approval and date of the Head of Department of your institution. Below is an example.

This work has been examined by me and it has been found acceptable in partial fulfillment of the requirement for the award of Bachelor of Science (B.Sc.) Degree in Mass Communication of the University of Lagos.

Supervisor's name	_____	Date	_____
HOD	_____	Date	_____
External Examiner	_____	Date	_____

The certification page is a statement of undertaken. This explains why supervisors do not trifle with project/thesis/dissertations because their name is at stake, i.e. this is the reason why supervisors ensure their students do the right thing.

Dedication page: This is the section where you mention to whom you want to address or inscribe as a compliment i.e. the section where you express your deep concern as against peripheral concern to someone or people for their love, assistance, inalienable right on whom to dedicate the work to. However, be decorous in the way you express yourself. Some people dedicate their work to the creator God, some to their wife, children, parents, spouse etc.

Acknowledgments page: This is similar to dedication page except that the words used to express your feelings may not be as strong as that of dedication page. Here the number of people you are likely to mention will be many compared to dedication. Those mentioned will be named in connection to help and assistance rendered to you directly or indirectly while carrying out your research. In most cases, you named your colleagues in the class, those who assisted you to collect data, those who contributed in one way or another to the study etc.

Abstract page: This is where you give a summary of your work. Abstract page is always brief and short; in most cases it is one page. It's comparable with the Executive summary in advertising or public relations proposal. Abstract page gives a recap of the topic investigated, the theory reviewed, the methodology adopted and justification for the use of the method, your findings, conclusions and suggestion/recommendations. The importance of abstract page is that whoever is interested in your work can easily take a glance at the page to get a grasp of the content instead of reading everything from chapter one to five before

understanding the work.

Table of content page: This page lists the chapters and the subs of each chapter in sequential order for easy referencing, i.e. it lists them according to page(s) they are, or appear. Just like the abstract page, the importance of table of contents page is in the fact that it can be easily referred to by anyone interested in your work.

List of Table/Diagrams page: This page comes after the table of contents page and it lists the tables and diagrams you used in your work. The system of identifying the tables and or diagrams is chapter by chapter i.e. they are identified on the bases of chapter they appeared. Of course, you must have given the tables/diagrams a code and a label when you used them and it is this code and label that you named on the list of table page not the page the tables/diagrams appeared.

CHAPTER ONE: Any one of these titles can be used: (1) Introduction (2) Background and Introduction (3) Problem (4) Problem statement (5) Introduction: The problem (6) Statement and significance of the problem, before the subs are delved into. **This chapter sets the tone of what you are doing.** It answers the question **What that you are doing.** This chapter introduces your study to your would-be readers. A good introduction justifies the study by demonstrating in concrete terms that a problem really exists and it is worth while investigating the problem.

Background to the study: This is the section where you give background information of the problem you are investigating. The aim here is to set a tone for your study. Note that there is no problem being investigated that does not have history. The background therefore is the history of the problem being studied and this may include other relevant studies to support your own study.

Statement of the problem: This is a detailed and critical (unbiased) analysis of the nature of the problem being investigated. The statement of the problem must be straight and to the point. There are **THREE** ways/form to express statement of the problem. They are: (1) In statement (2) As a question (3) As a hypothesis. The problem statement must be stated as simple and clear as possible and in way(s) that communicates. Remember that when the statement is not clearly stated, the researcher loses his way. The statement of the problem is a compass to the study. Note that a good statement of the problem uses the works of previous researchers to properly delineate the problem of study. The idea is to establish that a problem exists that you are studying, therefore a major requisite is you state or restate what previous researchers did and their findings in order to situate that a/some problems exist(s) that your own study wants to delve into. In most cases the last paragraph of the section is dedicated to what your own study is doing after a lucidly-critical examination of what previous researchers did. Problem in research is an intellectual stimulus that requires scientific response. Below are examples of statement of the problem stated in statement form, question form and hypothesis form:

(1) Statement

The high number of commercials (advertisement) messages on both the television and radio in the past two years has succeeded in reducing the level of understanding of these commercial messages.

(2) Question Form

Does the high number of commercial messages on both the television and radio in the past two years reduce the level of understanding of these commercial messages?

(3) Hypothesis

There is no relationship between the high number of commercial messages on both television and radio in the past two years and the level of understanding of commercial messages.

Objectives of Study: This is the same as purpose of study. Your concern is the reasons why you are investigating the problem and why you are interested in studying the problem. The rationale/purpose of study is limited to the study. Do not conduct any illogical rationale. Note that objectives of study **MUST** be stated in clearly observable and measurable form. The objectives are direct derivatives of the statement of the problem. Note that there is a relationship between objectives of study and method(s) adopted in conducting studies. If the objectives are clearly stated, the method to adopt in conducting the study becomes quietly apparent. It now becomes a question of asking yourself who, whom and how do I get my data; that is what means of inquiry do I adopt (refer to table 1.0 in chapter one). If this question is correctly answered your method is apparent. Objectives of studies are itemized and numbered.

Research Questions and or Hypothesis: This is the section where you itemize the questions and or hypotheses of your work. The concern here is: the measures you use must be relevant, measurable, reliable and valid. You need to be careful at this level because if you took a wrong step, it could adversely affect your work. It is advisable to show colleagues or superiors your questions/hypotheses before carrying out your study. Sometimes your measures take the form of questions only, sometimes it takes the form of hypotheses only and sometimes you use both. Which ever you use, ensure your questions and or hypotheses are derived from your topic, and are relevant to it. Note that research questions are direct derivatives of the objectives of study. The difference is that while the objectives are written in statement form, the research questions are written in question form. Also,

note that if you have five objectives you **MUST** have five research questions; that is that the two must be of the same number. Again, your research question number one must be derived from your objectives number one, ditto two, three, four etc. Also, your research questions **MUST** be unambiguously clear with the variables you want to measure apparent in it.

Scope of Study: This is the areas of endeavors your work covers. Scope of study is sometimes referred to as delimitation of study. Endeavour to make the problem you investigate narrow and manageable. Avoid too wide a problem with too many variables. It is not out of place if you include where you will get your data (population) in your scope of study.

Significance of Study: This deals with the importance of your work to knowledge generally, to human life and academics. A study that adds nothing to the advancement of knowledge is good for nothing beyond the experience the researcher acquires. In scientific research, private facts are not verifiable facts.

Definition of Terms: As a researcher, you owe it a duty to make clear to the reader in precise language the thoughts you intend to convey. As such, any concept, constructs, words and phrases which have unusual or restricted meaning must be operationally defined (Read chapter seven for more on operational definition). In order to ensure consistency of interpretation, such terms and worlds must be defined to suit your research i.e. you must give them meaning as you want them viewed in your work. For instance, you can operationally define public relations to be 90 percent doing good and 10 percent talking about it. However, while operationally defining terms in your study ensure that

1. You do not define the obvious except where the obvious have been used differently.
2. Define only terms that are absolutely

3. necessary.
Where you use authoritative sources in your definitions make sure you document them.
4. Operationally define terms which though is in common use, but have special meaning, or are used differently in your discipline.

CHAPTER TWO: The alternative titles that can be used are:

(1) Review of Literature (2) Review of Related Literature (3) Literature Review (4) Review of Relevant Literature. This chapter examines what has been done concerning the problem you are investigating. Problem in research is an intellectual stimulus that calls for response(s) in a systematic, procedural and scientific way. This chapter explained thoroughly the theoretical framework. The same chapter reviews how previous researchers looked/examined the concept, range of exposition of the subject, what studies and what research methods were adopted in studying the problem. You also examine in this chapter any contradictions in studying the phenomenon by earlier researchers. If there is any contradiction, will your work reconcile the contradictions? In your review of literature, you need to construct a framework, conceptual and or theoretical relative to previous work in the area. You associate your work to a theory or to theories to show you know what you are doing. In this chapter, your major concern is how to synthesize three things: (1) Conceptual Literature (2) Theoretical Literature and (3) Empirical/Research Literature. Note that if a good review of literature is done, the probability of going back to make adjustments to your chapter one is a certainty. This is because you would have seen that there is or are something(s) to adjust in your chapter one.

In starting your chapter two, you first introduce it. **The Introduction** contains a sentence of the problem you are investigating and a summary of the content of the same chapter,

i.e. an overview of works reviewed: theoretical, conceptual and empirical. **Conceptual Review:** The subject matter here is the concept of your work i.e. that concept which clothe your work, a sort of antecedent of the embodiment of the abstractions your work covers and of which you want to review. **Theoretical review** deals with the theory/theories underlying your work. It entails an unbiased review of the theory relevant to your work. While reviewing the relevant theory, you must not forget the component(s) of the theory. **Empirical/Research Review:** This aspect deals with the relevant researches done in the area or adjoining area you are investigating i.e. your review what has been done in the area, how it/they has/have been done, the conclusions arrived at and suggestions/recommendations. Endeavour to review as many works as possible. Remember to do a critical review and not a superficial review as the depth of your review can depict you as either serious or unserious. Research review is otherwise called empirical review.

CHAPTER THREE: The alternative titles you can use are: (1) Method (2) Procedure (3) Design (4) Design of Study (5) Method and procedure (6) Research Design (7) Methodology. At the beginning of this chapter is an **Introduction**. This is the part where the contents of the chapter are mentioned as briefly as possible without going into the details. It may be a paragraph, two paragraphs, or more, depending on the content of the chapter. The sub-sections of this chapter vary and is dependent on the study being conducted. **Methodology.** This sub-section gives indication of the method to use and the reason why the method is being used. If the approach (method) is **Triangulation**, you state it and give reasons. Triangulation is a multi-method approach i.e. the use of more than two research methodology. **Population of study:** This is the aspect where you state the populace or phenomenon you are studying. It is important you state this for clarity of purpose and objectives. Population of study clearly stated indicates the crux of the study as well as who or what to get

data from. **Sampling plan** answers **THREE** questions: (1) Who is to be surveyed i.e. (Sampling unit) (2) How many people are to be surveyed (Sampling size and) (3) How will they be selected (Sampling procedure). For example, if a researcher were to study newspaper readership habit of University students, the sampling unit would be University students. But the issue of whether to study the students individually or in groups would arise. This would lead to Unit of Analysis discussed in chapter seven.

The next consideration is sampling size (Refer to chapter of four). Also, how the sample will be selected is the subject matter of whether to use probability or non-probability sample (this was also discussed in chapter four). **Data Collection Instrument:** This sub-section deals with the tools for collecting your data, the form and content of the tools and the procedure of administering the tools. For example, in survey method, the data collection instrument is interrogation, while content analysis method uses abstraction as the data collection instrument (Refer to table 1.0 for more). **Data Analysis Approach.** The purpose in this sub-section is to prepare the readers mind for your plan of data analysis, i.e. how you will analyse data collected, which statistics are you using? Or are you using statistics at all? If there will be tables, will they be univariate, bivariate or multivariate tables? At undergraduate level, methods often used to analyse data are simple frequency and percentage. Also, your data are usually presented using tabulation and cross tabulation. At higher levels (postgraduate), more sophisticated statistical techniques such as T-test, ANOVA, correlation etc are often used. This sub-section also states whether you will analyse your data manually, or you will use computer. Note that chapter three is basically the chapter that deals with all kinds of materials to be used in the study, so you must display originality of ideas.

CHAPTER FOUR: The alternative titles are: (1) Findings (2) Results (3) Findings and Discussion (4) Data Analysis (5)

Interpretation (6) Data Analysis and Discussion (7) Data Analysis and Interpretation. What you do in this chapter is to report your findings. You may report and discuss together, or you report and discuss later, the choice is yours. However, this chapter must be properly organized and arranged for easy understanding. Tables and diagrams used must be labeled and properly interpreted. Let everything you write be relevant and pungent, no platitudinous expression. Refer to chapter seven for more.

CHAPTER FIVE: Alternative titles that can be used are: (1) Summary, conclusion and recommendation (2) Summary, conclusion and suggestions (3) Summary problem/hypothesis, method and findings (4) conclusion. In this chapter, you restate the problem investigated, the questions/hypothesis, the method and the findings. After this, you state the findings for general understanding of human behaviour in the area of your study, i.e. the **Conclusion**. Note that these findings must have been earlier stated in chapter four. The next thing to do is to make **Recommendations and Suggestions** based on your conclusions. As part of your recommendations and suggestions, remember that some questions not yet answered, or not fully answered by your work, but which are relevant to the problem investigated or to knowledge in the area investigated must be taken care of. Recommendations are derived from your findings while suggestions for further studies is not. Suggestions for further studies are areas you want researchers coming after you to study. **Limitations of study.** These are problems encountered while conducting your study. They are restrictions imposed by the environment of the study area. Such problems include: (1) Faulty instrumentation (2) Financial Problem (3) Time factor (4) Unforeseen crisis in the society that may affect respondents etc. Limitations of study cannot be known until a study has been conducted. Therefore, it is suggested that limitations of study be included as part of Chapter Five Other sections of a completed project, dissertation and thesis are: (1) Bibliography (Refer to

chapter nine) and Appendix (es) These are supplementary materials usually attached at the end of a piece of writing. Such supplementary materials include: (1) questionnaires used (2) newspaper cutting (3) Statistical tables and diagrams etc.

CRITERIAL FOR REVIEWING RESEARCH/ARTICLES

The following are some of the criteria for reviewing research, articles etc. The underlisted is by no means the best, but they are good guide.

1. Aptness of the title
2. Conceptualization of the problem
3. Articulation of research purpose
4. C o m p r e h e n s i o n o f r e s e a r c h rationale/assumptions
5. Logic of research questions/hypothesis
6. Operationalisation of concepts
7. Pertinence of Literature review
8. Elucidations of theoretical framework
9. Explanation of research design
10. Propriety of data collection instrument
11. Explication of analytical techniques
12. Scope (depth and breadth) of analysis
13. Clarity of tables and diagrams/graphs
14. Application and appropriateness of statistical techniques
15. Logic of Interpretation
16. Soundness of conclusion
17. Practical application of findings
18. Objectivity of reporting
19. Contributions of work to knowledge
20. Lucidity and reliability of writing style
21. Currency and style of documentation
22. Relevance of work to human life
23. What else? Fill the gaps

QUESTIONS FOR REVIEW

- (1) Research is a series of activities. Discuss?
- (2) Pick **FOUR** undergraduates long essay (thesis) and critically examine them?

CHAPTER 11

RESEARCH REPORTING AND ETHICS

According to Ackof (1953), research is a dual process: (1) A problem solving process and (2) A communicative process. This chapter is on the second phase of the process i.e. the communicative process. Research is incomplete without a report of your findings. Whether your research is qualitative or quantitative, writing report is a must. Writing a report of your findings is communicating what you discovered to others. Remember that the quality of your writing will play an important role in the way people who read your report will respond to your research. Thus, it is important that your report be organized, grammatically correct and argued right.

Naturally, the first step in writing research report is to identify the intended readers. This is because the style, organizations and the mode of presentation depend on the target audience. In mass communication research, there are **TWO** types of audiences and there are **TWO** types of research reports (Wimmer and Dominick, 1987).

- (1) Research reports aimed at colleagues and intended for publication in scholarly and professional journals or for presentation at conventions.
- (2) Research report aimed at decision makers and intended for in-house use only.

There are different requirements for both types of reports. For example, in reports aimed at colleagues, the researcher must pay attention to the theory underlying the research, the methods used and the techniques of analysis, the format, length, style and organization of the report must also conform to the requirements of the journal or the conference. For research reports aimed at decision makers, the researcher must prepare a written report with a short executive summary; this type of research report must be flexibly written because some decision makers prefer to be briefed orally. This verbal presentation must be accompanied by visual aids, handouts and any other material that could aid easier understanding of the report.

No matter what the situation is, or who the audience(s) is/are. The primary goal in all research report is **ACCURACY**. Accuracy is required in research reporting for **TWO** reasons: (1) An accurate report provides the necessary information for those who wish to replicate the study (2) A clear explanation of the investigator's methods provides an opportunity for readers to completely understand the project.

FUNCTIONAL DETAILS OF WRITING A RESEARCH REPORT

SCHOLARLY JOURNALS: (1) Avoid using first personal pronouns such as: I, me, my, we etc. Rather, use third person pronouns such as: "subjects were selected randomly" "Respondent A said that..." Where the article is a commentary, use first personal pronouns. [2] When submitting a paper for professional publication, place tables, graphs, charts and figure on a separate page. This is because if the article is accepted, they will be typeset by one department of the printing company and the text by another. (3) Read and understand the requirements of journals before writing your article. These journals provide specific rules regarding acceptable writing style,

footnotes/endnotes, bibliography, number of copies to submit etc. (4) Keep language used and description simple by avoiding unnecessary and complex words (5) Use active voice rather than passive voice. For example, "we found in our research..." is better than "it was discovered by us in our research", or "it was found by the researchers that" (6) proofread your manuscripts carefully, preferably several times (7) Avoid phrases or references that could be interpreted as racists or sexist. For instance, "the respondents took their questionnaires..." is better than "Each respondent took his/her questionnaire" (8) check all data for accuracy (9) use acceptable grammar; avoid slang (10) provide acknowledgement when you use another person's work etc.

FOR BUSINESS OR GOVERNMENT DECISION MARKERS

[1] Provide an executive summary at the beginning of the report. This is because decision makers may not read everything in the report. In writing the summary, do the following:

- (a) Get to the point and state conclusions quickly.
- (b) Keep language simple and official. Be concise and avoid the use of Jargons and overly technical terms.
- (c) Be brief. Let the summary be at most two pages.

2. Place detailed and complex discussions of method in a technical appendix. Give summary of the procedures in the body of the report.

3. Use clearly defined and easily understood quantitative analysis technique. This is because most decision makers are not familiar with complicated statistical procedure.

4. Use graphs and charts wherever appropriate to make numerical findings more meaningful and understood.
5. Most decision makers like research that provides answers to their questions. So put the conclusion reached and recommendations for action in the last section of the report.

FOR RESEARCH REPORTS i.e. project, thesis and dissertation (READ CHAPTER TEN).

GUIDELINES FOR WRITING RESEARCH REPORTS: COMMON ERRORS TO AVOID

Below are some common problems to avoid while writing your research reports. This guideline was given by Asa Berger (2000)

1. **Awkwardness:** Avoid writing your report in an ungainly and stiff manner. Also vary the sentences structure of your report. Do not use one sentence structure.
2. **Coherence Problem:** Your sentences should flow together. This you will achieve by using good transitions to guide your readers.
3. **Dashes and Hyphens:** Many writers mistake dashes for hyphens. A dash (-) is made of two hyphens. Hyphens are used to link compound words e.g. daughter-in-law and cannot be used as dashes. Dashes are used to suggest a pause in a sentence that is longer than a comma, or to set off an important phrase.
4. **Comma Faults:** Commas cannot be used to set off two independent clauses, that is two complex ideas. You must use a semicolon or make some other kind of a change such as inserting a transition e.g.

- | | |
|---|---|
| X | Waziri loved research, he really enjoyed interviews |
| ✓ | Waziri loved research, he really enjoyed interviews |
| ✓ | Waziri loved research, because he really enjoyed interviews |

5. **Fragments:** Avoid using sentence fragments, incomplete thoughts that you think are sentences in your reports.

6. **Wordiness:** Avoid writing that is too wordy i.e. writing that uses as many words in some passages where a few words would do the same thing.

7. **Spelling Errors:** If you are not certain about the way a word is spelt, check the correct spelling in the dictionary.

8. **Clarity Problems:** Readers find it hard to understand ideas not clearly expressed. Such unclear ideas are usually ambiguous and sometimes unintelligible. There are reasons people write unclearly. They include: [1] They know in their minds what they mean but don't express what they know in their writing, [2] writers sometimes do not think clearly. To avoid clarity problems, let other cross check your report, (3) other common errors to avoid in writing your reports are: repetitiveness, verb agreement problems etc.

RESEARCH AND ETHICS

ETHICS is a branch of philosophy that deals with what is good and bad and with moral duty and obligation. It can also be viewed as the principles of moral conduct governing an individual or a group. The source of what is good or bad, right and wrong or moral varies. They may be religious, political ideologies, culture, or the pragmatic observation of what seems to work and what does not. Generally, what we regard as morality and ethics in day-to-day life is a matter of agreement among members of a group.

This explains why to some people, what is ethical is that which conform to the standards of conduct of a given profession or group. Surprisingly, different groups have agreement on different codes of conduct, just as different societies. To this end, therefore, if you are going to live in a particular society, then it is extremely useful for you to know what that society considers ethical and what they consider unethical. For instance, polygamy is a condemnable act in the United States of America, but it is not in Nigeria. This argument of ethics varying from one society to another applies to social scientific research.

If you are going to do/embark on social scientific research, you should be aware of the general agreements shared by researchers as to what is proper and improper in the conduct of scientific inquiry. Below are some hypothetical research questions that involve ethics.

- (1) Lecturer hands over questionnaires to his students and told them that if they do not complete the questionnaire they will lose marks in their examinations.
- (2) Stating that respondents' anonymity is guaranteed, but later marking questionnaire submitted by each respondent for identification purpose.
- (3) Lying that subjects will be exposed to few messages but were exposed to more than enough messages.
- (4) Using respondents for a research without their knowledge or consent.
- (5) Coercing people to participate in research.
- (6) Withholding the true nature of the research from participants.
- (7) Leading participants to commit acts that diminish their self-respect.
- (8) Violating participants' right to self-determination.

- (9) Exposing the participants to physical or mental stress.
- (10) Invading the privacy of the participants.
- (11) Withholding benefits from participants.
- (12) Etc.

QUESTIONS FOR REVIEW

- (1) How relevant is ethics to research?
- (2) Reporting research requires no formalized way. Discuss?
- (3) Enumerate and examine **SIX** guidelines for writing research reports?
- (4) Read an article in any recently published academic journal. See how well the author(s) adhere to the guidelines in this chapter?

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Writing Survey Research Questions

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