DEPARTMENT OF CRIMINAL JUSTICE

BPCU001: RESEARCH METHODS

Table of contents

Unit 1

Introduction to Research

1.1 Introduction

This unit gives the meaning and role of research to society. It also identifies the various ways knowledge is obtained.

Upon completion of this unit you will be able to:

 Outcomes

- Define terms associated with research.
- To clearly identify the steps involved in research procedure.
- Explain the role of research in society.
- Identify sources of scientific and non scientific knowledge.

Terminology

Research: It is defined as a process of arriving at effective solutions to problems through systematic collection, analysis and interpretation of data.

Data: All the information a researcher gathers for his or her study

Statistics: It is the science of organizing describing and analyzing quantitative data.

Phenomenon: It is a fact, event, or situation that appears or is perceived to have occurred. It also refers to a remarkable person, thing or situation.

1.2 Research

The term "research" means to look for, examine, investigate or explore. Orodho and Kombo (2002:2) define research as the process of arriving at dependable solutions to problems through the planned systematic collection, analysis and interpretation of data.

Tuchman (1978) describes research as a systematic attempt to provide answers to questions.

Research is defined as a process in which scientific methods are used to expand knowledge in a particular field of study.

It is also defined as a planned and a systematic activity that uses scientific method in search for facts, truths or knowledge about something or about a subject.

It is the application of systematic procedures in order to discover answers to questions which concern issues and activities in the natural world.

Research assumes that problems exists that requires investigation. It involves the application of various methods and techniques in order to create scientifically obtained knowledge by using objective methods and procedures.

Different studies use different methods or techniques because they have different aims/purposes. The techniques must be appropriate for the tasks.

Research is simply the process of finding solutions to a problem after a thorough study and analysis of situational factors.

Business research is defined as an organized, systematic, data-based, critical, objective, scientific inquiry or investigation into a specific problem, undertaken with the purpose of finding solutions or answers to it.

It is an organized, systematic, critical, scientific, inquiry or investigation into a specific problem, undertaken with the objective of finding answers or solutions thereto.

It's a careful, patient, systematic and diligent inquiry or examination in some field of knowledge, undertaken to establish facts or principles.

1.2.1 Research Procedure

Research process therefore is a planned activity that requires order and logical approach to problems being investigated.

Research is systematic and purposeful which implies that it proceeds through a certain logical manner in order to obtain meaningful information.

It involves the following steps or strategies:-

a).Discovering or identifying the research problem to be investigated

A problem is the question or idea of interest to you or to many others that ought to be answered through data collection. The problem could be behavior in class or performance in a subject or filing of electronic records. It is also a question of investigation.

The first step in research is to identify a problem and the problem to be studied must be clear, concise and meaningful. The first step in problem identification is to identify a general idea, which is related to your subject of interest and from this, you identify a problem. The second step will involve narrowing down the general problem into a specific one, which helps to reduce the study to few variables which one can easily handle.

b). Formulating or stating a hypothesis

It is a tentative assumption or preliminary statement about the relationship between two or more things that need to be examined. A hypothesis is the likely outcome or expectation e.g. "tall students tend to be humble in class". Investigate this and try to find out if your expectations are true.

c). Labeling variables

It is a variable is a factor that you are likely to treat, manipulate or handle in the study. e.g. height, age, volume among others. Leedy (1980) defines a variable as the factor or characteristic of interest that a researcher would like to handle, observe or manipulate in the research e.g. age, intelligence, academic performance, age etc.

It's a component of a problem. It's a type of quantity that may take on more than one value like sex can be differentiated by two different values, male and female.

i). **Independent variable**

An independent variable is a variable that a researcher manipulates in order to determine its effect or influence on another variable.

They are also called predictor variables because they predict the amount of variation that occurs in another variable. You need to consider the examples below;

- The influence of alcohol on reaction time.
- The influence of income on housing conditions.
- The influence of gender on career choice.

The variables alcohol, income and gender are all independent variables and for example in 1, the amount of alcohol in the blood may increase reaction time like one takes long time to react to an emergency while driving.

They can appear in two forms, that is, those variables that the researcher has manipulative control and those that have already occurred and hence he has no manipulative control at all.

ii). **Dependent variables**

Dependent variables sometimes called criterion variables attempt to indicate the total influence arising from the effects of the independent variable. A Dependent Variable therefore varies as a function of the Independent Variable. They cannot be manipulated by the researcher like for example; the influence of hours on performance in a statistics test; the effect of altitude on daily mean temperatures.

The variables statistics test performance, cost of building materials and daily mean temperatures are all Dependent Variable.

d). Review of related literature

It should show what the others have said about the topic. Research involves the review of the literature.

e).Establish the study design

It involves the people who will participate in the study (how many and where they will be found e.g. the population, sample) and also determining or selecting the most appropriate the research instruments/data collection tools or methods).

f). Data collection

It involves collecting the required relevant information based on the methods identified above. The researcher might just observe, ask questions or carry out experiments.

g). Data analysis

It indicates the statistical procedures to use to analyze data. These might be as simple as frequencies or determining the variances, SD, mean or others. Ensure that the statistical procedures chosen are appropriate to the research questions being asked and the hypotheses you intend to test.

h). Report writing

It's the last step and it's where the researcher communicates the findings to other researchers or to the public and one spells out what the research offers and what you think can follow next.

1.2.2 Role of Research in the Society

Research plays the following roles in society;

a) Research helps in the development or generating new knowledge e.g. fundamental research helps to produce generalizations of principles upon which ideas are based.

b) Helps to solve problems within a system.

c) Reduces curiosity through the information obtained and reported.

d) In humanities and education, it helps teachers, sociologists and educators to improve on the process of learning by helping test theoretical concepts in actual problem situations. Applied research for example helps such to determine whether teaching through student centered, teacher oriented approach or a mixture and try to find out whether other approaches will enhance better academic performance.

e) Research provides the basis for nearly all government policies in our economic system e.g. government budgets that are based on analysis of the needs and desires of the citizens of a country.

f) It helps in solving operational and planning problems of business and industry i.e. operations, market and motivational research help in business decisions.

g) Research is important for social scientists in studying social relationships and in seeking answers to various social problems.

h) It enables individuals to be efficient and do something better.

i) It is the fountain of knowledge for the sake of knowledge; it is the most efficient and reliable source of guidelines for solving problems. Through research, one is able to discover new facts, their correct interpretation and practical application.

j) It is a formal training that enables one to understand the new developments in his or her field better.

k) It enables prediction i.e. it provides the ability to estimate phenomenon or situations depending on known situations.

l) Research enables control i.e. it provides the ability to regulate phenomenon under study. Usually, one phenomenon is manipulated in order to exert control over another.

m) It promotes innovativeness and development of new products or services.

n) Research helps reduce curiosity.

o) It enables theory development, which involves formulating concepts, laws and generalizations about a given phenomenon.

p) It is also conducted in an attempt to confirm or validate existing theories.

q) Research enables an individual to describe a phenomenon, predict its occurrence and observe factors that cause the occurrence with certainty and accuracy.

In conclusion, research is the systematic and rigorous process of enquiring into a problem for the purpose of discovering relevant information and principles.

1.2.3 Categories of Research

1.2.3.1 Scientific Research

Research is the science of seeking, organizing, analyzing and interpreting data. Kerlinger (1993) defined scientific research as a systematic controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena.

Bless and Achola (1988) defines scientific research as a systematic investigation of a question, a phenomenon, and or a problem following some principle.

Characteristics of scientific research

They include;

- Its empirical meaning that each step is based on observation, experience and perceptions.
- It's systematic and logical meaning that observations are done systematically one at a time, starting with description, explanation and finally prediction and in addition, the correct order must be followed.
- It is replicable meaning that since the observation is objective, anyone carrying out a study in the same circumstances should come up with the same findings.

The scientific method involves the identification of a problem, formulating of hypothesis and defining the methodology. Scientific research may then be defined as the "careful and systematic investigation in some field of knowledge.

Research therefore implies the systematic application of research characteristics such as that research is directed towards investigating a specific problem (has a goal) to a study.

1.2.3.2 Types of Research in Humanities and Education

a). Basic/Fundamental/Pure Research

It's the research undertaken to generate and expand knowledge (academic purpose).It attempts to explain and describe the status of things e.g. a researcher wants to find out the administrative structure in schools. It's concerned with questions which are raised in the world of human beings interaction and activities. These human activities are less open to manipulation and control by the researcher.

In this research, the researcher depends on the quality of information obtained and the way it has been obtained.

b). Applied Research

Research undertaken so that the knowledge obtained can be used to solve a specific problem. A manager in an organization is faced by a demand for a timely solution e.g. a particular product might not be selling well and a manager might want to know the reasons as the basis for taking corrective action or measures. A researcher may want to determine the effects of alcohol on student's memory in science.

c). Evaluative Research

It focuses on a particular practice a given time and attempts to assess the characteristics of something so as to determine its level or worth so as to improve on it. A researcher wants to assess discipline in primary schools.

Limitations of research range from; lack of funding, lack of human capability, side effects such as language barrier, attitude, lack of cooperation, lack of information, sources etc.

1.3 Scientific Knowledge and Non-Scientific Knowledge

1.3.1 Scientific knowledge

Scientific knowledge is based on systematic observation/systematic research (step by step approach). It involves making logical conclusions after investigating a phenomenon in a systematic and planned manner.

1.3.2 Non-scientific knowledge

The non-scientific knowledge is based on the lay people sources of knowledge e.g.

- Opinion of Peers – this is a situation where knowledge is sourced from friends.
- Tradition – this is knowledge that has been carried over from one generation to another – this knowledge is acquired through socialization and indoctrination.
- Experience – knowledge acquired thorough human beings experience in life.
- Authority- Experts in a specialized area give their opinions in a specialized area e.g. HIV/AIDS, Records management, Ethics, Entrepreneurship, Management, However, note that authority may also not be a legitimate source of knowledge especially because the experts may error within their own special areas.
- Debates with colleagues.
- Media e.g. Television, radio, newspapers etc.
- Unit summary

Summary

In this unit you learned that research is the process of arriving at effective solutions to problems through systematic collection, analysis and interpretation of data. Its significance include development or generating new knowledge, solving problems within a system and reduction of curiosity.

You also learned about the various steps in research process. The process involves discovery of the research problem, Formulation of a hypothesis and labeling of variables. Others include review of related literature, establishment of the study design, data collection, data analysis and report writing. The unit also covers sources of both scientific and non-scientific knowledge. Scientific knowledge is based on systematic observation/systematic research while non-scientific knowledge is based on the lay people sources of knowledge like opinion of peers, tradition, experience and Authority.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Explain the importance of research in society.

b). Identify the scientific sources of data.

c). Give the meaning of phenomenon.

Assessment

a). Show the procedures that you would follow to conduct research.

b). Explain the main sources of non-scientific data.

c). Distinguish between independent and dependent variables.

Unit 2

Research Title and Research Problem

2.1 Introduction

This unit discusses research problem and also explains how to formulate the statement of the problem of a research project. It also discusses the aim of the study, objectives of the study and major components of research that normally appear in Chapter One of a research project report. Upon completion of this unit you will be able to:

Outcomes

- Define terminologies associated with research problem.
- Formulate a research problem.
- Write the purpose and objectives of the study.
- Formulate the hypothesis and justification.
- Explain the significance of the study.

Terminology

Research problem: It is an issue that exists in literature, theory or in arts that leads to a need for a research study.

Problem statement: This section is where the researcher introduces briefly the general area of the study. The researcher then narrows down to the specific problem to be studied.

Hypothesis: It is a tentative explanation for certain behaviour patterns, phenomena and events that have occurred or will occur.

Purpose: It is a broad statement that indicates what the researcher is about to do about the problem under investigation.

Objectives: It is the specific activities that the researcher aims to carry out in order to answer questions addressed by the study.

2.2 Stages in Research Development

2.2.1 Research Problem

The initial step in the scientific research project is problem identification or to clearly formulate the specific problem that is to be examined.

A research problem is some difficulty which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same.

It can also be defined as an issue that exists in literature, theory or in arts that leads to a need for a research study.

There are two types of research problems namely;

- Those which relate to states of nature.
- Those which relate to relationships between variables.

In formulating a research problem, the researcher must single out the general area of interest he wants to study. It involves understanding the problem thoroughly and rephrasing the same into meaningful terms from an analytical point of view.

The researcher must examine all available literature to get himself acquainted with selected problem. The problem must be defined unambiguously to help in discriminating relevant data from irrelevant ones.

2.2.1.1 Steps in selecting a research problem

a). Identify the broad area that the researcher is interested in.

The area should be related to the professional interests and goals of the researcher such as information technology, records management etc.

b). Identify a specific problem within the broad area

The area should be one that will form the basis of the research study.

It implies that the researcher should narrow down from the broad area to a specific problem. This becomes the research title or topic.

In selecting a specific problem, the researcher should consider the key factors that help in identifying a researchable problem and first the research problem should be an important one. An important research problem is the one that leads to findings that have widespread implications in a particular area and cover a reasonable scope.

The researcher could refer to existing theories, existing literature like articles, textbooks, internet, discussions with experts on general topics, previous research studies, replication like carrying out a research project that has been done previously, the media and personal experiences in identifying a research problem.

It is only when a problem has been carefully and precisely defined that research can be undertaken to provide the required information.

The researcher should read widely to be familiar with what has been done and also he should ensure that the research chosen is worthwhile and has benefits to the society.

The research title should be short and simple yet informative. The title gives the reader some initial information about the area of research the report has covered and hence it's a pointer to the content of the report.

The title should also give an indication of the major variables of research, the target population and if possible the geographical location of the research. It's used for indexing once the document becomes official and also used by other researchers interested in reading your research report who may use the title to search for the report in the library, database or documentation centre.

The research title should be executed with due consideration to the researcher's capacity e.g. Finances, Time, Capacity etc. The selection of the research title can be guided by the researchers training or personal interests.

2.2.2 Statement of the Problem

This section is where the researcher introduces briefly the general area of the study. The researcher then narrows down to the specific problem to be studied.

It is the section where the researcher sells the research idea in formal and objective terms. It usually starts with a brief introduction section.

The end result will be a brief statement of the objectives of the research to be conducted.

The problem statement must be clearly stated and the right words used in order to convey the focus of the study effectively. It should be able to tell the aim or the main reason for undertaking research. The specific problem should be stated once the ideal situation and the introduction are indicated.

The researcher narrows down the focus and states the problem under investigation. The researcher states the problem under investigation and describes the factors that make the stated problem a critical issue to warrant the study. It should be brief and precise. It should range from one paragraph to two pages.

Characteristics of a good problem statement

A general problem statement has certain characteristics;

- It is written clearly and in such a way that the reader's interest is captured immediately.
- The specific problem identified in the problem statement is objectively researchable.
- The scope of the specific research problem is indicated.
- The importance of the study in adding new knowledge is stated clearly

- The problem statement must give the purpose of the research.

An Example of a problem statement:

"Performance tends to differ among students. Many factors are responsible for this. In some cases, some students who are quiet and disciplined don't perform well. This might be due to their personality."

2.2.3 Aim/Purpose of the Study

The purpose/aim is a broad statement that indicates what the researcher is about to do about the problem under investigation or reflects the intention or purpose of one's research. It comes immediately after the statement of the problem.

It should not exceed a paragraph when it's separated from the statement of the problem. It should be stated in declaratory terms. Aims are intentions, goals or what the researcher strives to achieve and they are also referred to as long term objectives. It reflects the aspirations and expectations of the researcher. They are usually stated in general terms that are not easily measurable.

Importance of aims of the study

Aim of the study is important since it;

- Reflects the outcome of the research and portrays the overall expectation of the study.
- Reflects the aspirations and expectations of the study and help in the formulation of the study.

2.2.4 Objectives of the study

Objectives are the specific activities that the researcher aims to carry out in order to answer questions addressed by the study. They should be specific, measurable and achievable within a given case study.

Objectives are derived from the purpose and are more specific than the statement or the purpose. Objectives determine the kind of questions which will be asked since they should address the objectives of the study. It's possible to address one objective using only one question in the research instrument or even more than one question for one objective.

They are intentions or purposes stated in specific measurable terms and provide opportunities for evaluating the end results. They are operational and they state the specific tasks to be carried out by the researcher to accomplish the aims of the study. The tasks are measurable.

Objectives determine the data collection and analysis procedures to be used.

2.2.5 Research Hypothesis

A hypothesis is defined as a tentative prediction of outcome of the results.

A hypothesis is a guess or an assumption. It is a tentative explanation for certain behaviour patterns, phenomena, or events that have occurred or will occur (Gay,1996) e.g. "price increase influences commodity consumption".

It is a statement that describes an unknown but tentatively reasonable outcome for the existing phenomenon.

Orodho and Kombo (2004) define hypothesis as educated guesses about possible differences, relationships or causes of research problems.

They state what the researcher thinks the outcome of the study will be. It's a tentative answer to the problem and it's based on the relationship between variables in the study (Independent Variable & Dependent Variable).

Example; If Independent Variable was attitude and Dependent Variable is performance, the hypothesis would be; "There is effect of students' attitudes on their performance in Maths."

Hypothesis is expressed in terms of a relation between two or more variables. It's usually stated before research begins and a well stated one should give direction to how data will be collected. It should be clear, precise and simple. It is declarative and more specific than the statement of the problem.

It's stated in two ways;

- In negation and indicates the "no" relationship like "there is no difference between boarding and day schools".

- The alternative hypothesis where it's stated to indicate the actual expectation or relationship like "there is a difference in academic performance in science between students in boarding and day schools".

Other examples of Problem and hypothesis

a). **Topic:** The effect of method of measurement on student performance on Biology sub-tests.

Statement of the problem

This study will assess the effect of methods of measurement on students' performance on Biology sub-tests.

Null Hypothesis: There is no significant difference in the performance of students among three methods of measurement investigated.

b). **Topic:** Utilization of decision-making tools in Jua Kali industries in Nakuru district.

Statement of the problem

This study is designed to investigate the extent to which Jua kali industries in Nakuru district use management tools in decision making situations.

Null Hypothesis: There is no significant difference in management tools utilization among different sizes of Jua Kali Industries.

Note that Research questions and hypothesis are for qualitative research and specific objectives for quantitative research.

2.2.5.1 Importance of hypothesis in research

a) Hypothesis in research has the following significance;

b) It states the researcher's expectations concerning the relationship between the variables in the research problem.

c) The hypothesis refines the research problem.

d) By defining the variables in the study, the hypothesis enables the researcher to collect data that either supports the hypothesis or rejects it.

e) It forms the framework for the ultimate conclusions as solutions. Conclusions on the results are based on the tests of their hypothesis.

f) It guides collection of data and provide structure for meaningful interpretation of data in relation to the research problem.

g) They provide direction i.e. bridge the gap between the problem and evidence needed for its solution.

h) It enables researcher assess the information collected if it is relevant.

2.2.5.2 Qualities (characteristics) of effective hypothesis

A good hypothesis should have the following features;

a) It states clearly and concisely as possible the expected relationship (or difference) between two or more variables.

b) It defines the selected variables in operational and measurable terms.

c) It is testable and verifiable within a reasonable time. It is to support or not support the hypothesis by collecting and analyzing data.

d) Wordings should be clear and precise.

e) It gives logical arguments to justify the hypothesis.

f) It should be consistent with the existing body of knowledge, common sense or accepted truths.

g) It must be simple and concise as the complexity of the concepts involved may follow.

2.2.6 Assumptions in research

An assumption is a realistic expectation. It is something that we believe to be true. However, no adequate evidence exists to support this belief. An assumption is an act of faith. It is not tested in ones research.

If critics can dismiss your assumptions, then your research is not likely to be taken seriously. Thus, assumptions must be identified and considered with care.

Research is built upon assumptions since not everything needed to move forward is known. "One must assume something to learn something." "The more assumptions or the stronger assumptions that one makes, the more one insures that her analysis will yield clear-cut and interpretable results; at the same time, the researcher, more than the empirical observations or records, is determining these results."

All research is built upon assumptions. We are limited in what we can test at one time. Some variables may not be measurable until later.

2.2.7 Research Questions

This section translates the objectives into research questions to be answered by the research or specific hypothesis that should be tested. The research questions refer to questions which a researcher would like answered by undertaking the study.

A research question is stated in question form. Objectives and research questions can be both included in a proposal only when the objectives are broader and the research questions more specific.

2.2.8 Rationale/Justification of the Study

This section covers briefly the reasons for carrying out the study and any ideas or contributions which the researcher will offer. It captures any documented evidence to support the research like any statistical data available. Question like why is the study important.

2.2.9 Significance of the Study

This section describes the potential importance of the study; how the result/s will be used and who are the potential beneficiaries or consumers of the results/research findings. It addresses questions like how will the results be used?; who will benefit from the results?; what is the expected end product?; is the study worth it?

If the researcher is investigating poor prices, then the significance would be related to improvement of prices.

2.2.10 The Scope and Limitations of the Study

The scope indicates the coverage of the research.

The limitations describe the potential challenges in terms of research design, sample size, data collection procedures and analytical techniques.

A limitation is some aspect of the study that the researcher knows. It may negatively affect the results and probably the researcher has no control.

Assumptions are any important facts presumed to be true but not actually verified.

2.2.11 Theoretical/Conceptual Framework

A concept is an abstract or general idea derived from specific instances. A conceptual framework is defined as asset of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Reichel and Ramey, 1987).

The researcher may be interested in testing a particular theory or framework which should be clearly explained in the proposal.

It's the section where the researcher describes the main independent and dependent variables in the study and the relationship among them.

Summary

In this unit you learned about research problem as an issue that exists in literature, theory or in arts that leads to a need for a research study.

Steps in selecting a research problem include identifying the broad area that the researcher is interested in and then identification a specific problem within the broad area.

You also learned about statement of the problem and its characteristics, aims and objectives of the study and how to formulate research questions.

Moreover, you have learned the significance and characteristics of hypothesis. Other items covered in this unit include limitations of the study and the conceptual framework of the study.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Explain how you would identify a research problem.

b). Highlight the characteristics of a good statement of the problem.

c). Explain the importance of aims in a research study.

Assessment

a). Highlight the significance of research hypothesis.

b).Explain qualities of good objectives of the study.

c). Analyze the characteristics of a problem statement.

Unit 3

Literature Review

3.1 Introduction

This unit takes the trainee through various ways of evaluating related literature to the chosen research problems. It also covers the sources of information necessary for research. How to reference within text and compile references have also been comprehensively covered.

Upon completion of this unit you will be able to:

Outcomes

- Conduct literature review based on a research topic.
- Differentiate various sources of information.
- Indicate the role of a library and internet in research.
- Make quotations within text.
- Compile references and bibliographies.

Terminology

Data: It refers to all the information a researcher gathers for his or her study.

Literature Review: It involves locating, reading and evaluating reports of previous studies, observations and opinions related to the planned study.

Cited reference: It is a list of references which the researcher actually read and cited in the text.

Bibliography: It refers to the list of materials that were read whether they are cited or not.

3.2 Literature Review

The review of literature involves systematic identification, location and analysis of documents that contain information related to the problem being investigated.

It's the related literature that the researcher has reviewed on the related topic/title. It comprises of both the Primary literature (sources) and Secondary literature (sources).

Literature review is the documentation of a comprehensive review of the published and unpublished work from secondary sources of data in the areas of specific interest to the researcher or good sources of secondary data.

Primary Sources

Primary sources are those that comprise first hand knowledge e.g. eye witness reports and original documents. A Primary source is a direct description of any occurrence by an individual who actually observed or witnessed the occurrence. It's a description of a research by a person who actually carried the research. Information from the primary sources is more reliable than secondary sources.

Secondary Sources

Secondary sources are the sources which comprise of the second hand information. They are the publications written by an author who was not a direct observer or participant in the events described.

Such sources include books, journals, newspapers, magazines, conference proceedings, doctoral dissertations, master's theses, Govt. publications, financial, marketing and other reports and others. Library and electronic databases are good sources of literature review. Grey literature (something written but not published e.g. lecture notes, manuals), abstracts, periodicals, microfilm, pictures, visual information are also good sources of literature.

It's a description of an event by persons other than the eyewitnesses. It's the account or records which have been prepared by someone who was not actually present to observe the event. It's a description of a research as carried out by a person who actually carried out the research. It's advisable to use primary sources where possible because they contain current information. Literature review is not the researcher's words but the words of the author.

It is an examination of what others have said or done in the field covered by the research problem. It's a researcher's critiques of findings from other studies done in related areas and the critiques should include an assessment and the relationships and differences between researcher's study and the studies reviewed.

It's the systematic identification and analysis of documents containing information related to the study and it should point out how the problem of study is related to the previous research findings.

3.2.1 Purpose of Literature review

a) The purpose of the review of literature is to inform the reader about previous research conducted on the topic being researched or to determine what has been done already related to the research problem being investigated.

b) It also provides a framework for establishing the importance of the study.

c) It also highlights the gaps in the existing studies and provides the background for the development of the present study.

d) It ensures that unnecessary duplication is avoided.

e) It enables the researcher to acknowledge what others (researchers before him) have done.

f) In conclusion literature review is an important component of research because the person undertaking research benefits a lot from other researchers' experience.

A short introductory paragraph should be included at the beginning of the literature review section.

3.2.2 Steps in Undertaking Literature Review

a) Be familiar with the library before beginning the literature review.

b) Make a list of the key words or phrases to guide your literature search. It involves listing the main research headings and sub-headings or the key words under which it may be classified in a library catalogue or a computerized retrieval system.

c) The already compiled list in (1) above will at this stage assist you to go to the source/s of literature such as the Internet, Electronically Published materials either by the Government/Public offices, archives etc. In some cases solicit for support from the library staff to do the computer research in case the system is computerized.

d) Summarize the references on cards for easy organization of the literature such as articles, books, dissertations, periodicals, journals etc. These references must be relevant to the research topic or title.

e) Once collected, the literature should be analyzed, organized and reported in an orderly manner. Maintain a complete list of reference sources and include all the bibliographic details of the source such as the title, author, Edition, Publisher, place of publication, year of publication, website details, Journal details e.g. Vol. No. year, Page etc. Page numbers are vital when the source is directly quoted.

f) Make an outline of your main headings/topics/themes and subheadings/subtopics/themes in order of presentation. It involves deciding on the no. of headings and subheadings depending on how detailed the review is.

g) Analyze each reference in terms of the outline made and establish where it will be most relevant.

h) This is followed immediately by the compilation of literature review. The review of literature should be well organized in such a manner that the more general is covered first before the researcher narrows down to that which is more specific to the research problem. Similar concepts should be grouped together.

Note that enough time is required for reading, organization and the delivery of references especially when they are not within your custody. The presentation should be done in a professional and acceptable manner.

3.2.3 Quotations in Literature

With the expectation of direct quotations, the entire research report should be presented in the author's own words. It means that the researcher should not cut and paste pieces from other sources.

A direct quotation should be used especially when something is expressed so eloquently that one feels that accuracy will be lost in the process of re-formulating it.

A direct quotation also adds strength to the researchers work especially when the quotation is from a recognized authority.

Whenever a quotation is used, it must be reproduced as it was in the original quotation

The quoted material should be enclosed in the double quotation marks like .."……." especially if it is less than two lines of a page but if longer than that, it should be left but indented.

For example, Koontz (2001, P 56) says that, "management is a process that involves the five functions of management."

The longer quotations should be indented as an independent block meaning that the script should start at four spaces from the left and four spaces from the right of the margin. The sir name of the author, the year of publication and the page no. must be incorporated in the quotation e.g. Mungai (1999, P30).

3.2.4 Reference System

A recognized and consistent referencing system is vital.

A reference system enables the reader of the researching report to locate the information sources referred to when needed.

A reader may want to read more about the issue from the information sources and hence the need for including the referred resources at the end of every page.

Cited references, is a list of references which the researcher actually read and cited in the text.

A bibliography is list of materials that were read whether cited or not. A researcher could decide to include the cited references only or have cited references and a bibliography and in this case, the cited references are separate and do not need to be repeated in the bibliography or have the

bibliography only, which will have all references that is, those cited and those that were just read to gather information.

The American Psychological Association (APA) is the most common method of writing references and bibliography which entails writing the author's name, year of publication in brackets, title, place of publication and publisher.

Grey literature is anything written but not published like lecture notes, conference papers, manuscripts etc.

3.2.4.1 List of References

a). A Textbook

When citing a book or the title of a book, the following should be observed. Author-surname first, (the year of publication) title of the book and the subtitle, the edition, the place of publication, the publisher. Title name of the book is either put in italics or underlined.

When a book is written by two authors, you capture the two authors and the rest of the bibliographic information.

If more than two authors, capture the first name and et al. meaning and others but the rest remain.

Example of References

DU Preez, P. (1991). A science of mind the quest for psychological reality . 3rd Edition. London: Academic Press.

Weiss, N. & Hasset, M. Introductory statistics. Reading MA. Addis Ababa: Wesley. 1982.

Mugenda, O. M & Mugenda, A.G (1999). Research Methods. Quantitative and Qualitative approaches. Boston: Allyn & Bacon

If a source has more than two authors, you should only quote only the surname of the first author followed by "et al" which stands for "and others." e.g. a book by plug, Meyer,Louw and Gouws(1987) should be quoted as follows;

Plug et al.(1987)…….

b). Journal Article

An article in a journal- where the article is again written or authored or edited by one person, just quote the author of the article, (year of publication), title of the article, Title of the journal (italics or underlined)volume or no page of where the article is located. For example;

Eleenhard, H. (1990).Introduction guidance-what do the movies want? South African journal of psychology.22.p.210-225

Vol.1 1.22 210 –225.No…..

c). Internet Source (Web Page)

Author's surname, year of publication if given, title of document in italics followed by online in square brackets, publisher, available from Inf-URL, date you accessed the site.

Rao,P.(2001).MARKETING OF SERVICES[ONLINE], MCgraw Hill, Available from www.rao.com. (accessed on: 14 December 2005)

d). Dissertation or Thesis

Author,year, Project title. State of the dissertation in this case is it unpublished, the source or where you can get it. e.g Botha, M.P.(1990).Television exposure and aggressiveness among high school pupils: A follow up study over five years. Unpublished. Doctoral thesis, University of Free State. Bloeim fountain.South Africa.

   Or

Musumba,D.M.(2002).The survey of public libraries in Kenya. Unpublished.Masters/Doctoral Thesis, University of Nairobi, Nairobi.

e).Unpublished Paper delivered in a Meeting/Conference

Author, year and the month, title of the paper, where the paper was presented.
e.g. Stumpter, D.J (1980 September).One hundred and One Years. Paper presented at the National Psychological Congress. Johannesburg

f). Article in a Newspaper

Author (year and date).Title of the article, the title of the Newspaper. page No.
Eg Botha, J.(1988 1 April).Worst USA TV series also broadcast here.The Star, P10
g). Reference to a CD ROM
Example;
20th World Conference on Open Learning and Distant Education.(2001).[CD-ROM].Fern University, Hague, German.

Summary

In this unit, you learned how to evaluate literature that is related to research problem. Review of literature involves systematic identification, location and analysis of documents that contain information related to the problem being investigated.

Literature review is important in ensuring that unnecessary duplication is avoided, informing the reader about previous research conducted and providing a framework for establishing the importance of the study.

Steps in undertaking literature review have also been covered. To undertake literature review, familiarization with the library is necessary. A researcher should make a list of key search words, compile list of sources of literature, summarize references on cards, outline the references and have subheadings and headings.

You have also learned in this unit the systems used in quotations and referencing of text from various sources of information.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Define literature review.

b). Explain the sources of information that can be used to review literature.

c). Highlight the importance of quotations in literature review.

Assessment

a). Explain the importance of literature review.

b). Describe the steps you would use to review literature.

c). Distinguish between bibliography and references.

Unit 4

Research Methodology

4.1 Introduction

This unit discusses the various types of research designs and methods that researchers use in conducting research. It also describes how the methods are used for the research.

Upon completion of this unit you will be able to:

Outcomes

- Define research methodology.
- Explain the various research methods.
- Explain research design.

Terminology

Research design: The structure of research and it is the glue that holds all the elements in a research project together. It is the scheme, outline or plan that is used to generate answers to research problems.

Research methodology: It is the process, principle and procedure of identifying a problem and systematically seeking facts that will help one find a solution to the identified problem.

Basic Research: It's the research undertaken to generate and expand knowledge (academic purpose).

Applied research: Research undertaken so that the knowledge obtained can be used to solve a specific problem.

Evaluative Research: It focuses on a particular practice of a given time and attempts to assess the characteristics of something so as to determine its level or worth so as to improve on it.

4.2 Research Methodology

Research methodology refers to the process, principle and procedure of identifying a problem and systematically seeking facts that will help one find a solution to the identified problem.

The methodology captures the research design, population, sample, sampling techniques, data collection procedures and data collection tools and methods of analysis or techniques to be used to analyze data.

A good proposal should discuss the type of research design e.g. survey, experimental, correlational study etc. to be used and state briefly the reason why the chosen design is appropriate for the proposed study.

The data collection procedures capture the data collection instrument which is identified, defined and its relevance discussed. Information about the organization of the instrument can also be included.

4.2.2 Research Design

Research design spells out the type of method to use and it should show where and how the study is going to be done.

A research design can be thought of as the structure of research and it is the glue that holds all the elements in a research project together. It is the scheme, outline or plan that is used to generate answers to research problems.

It is the conceptual structure within which research is conducted. It constitutes the blueprint for the collection, measurement and analysis of data (Kothari, 2003).

4.2.2.1 Research Design process

It is the preparation of the research project. It involves making decisions on;

- What the study is about -research title topic
- Why we should undertake the study- purpose/aim
- Where the study will be carried out –environment/ area of the study.
- Where the data may be found – source of the data i.e. primary or secondary source.
- What the sample design will be and the sampling technique/methods to be used to select the sample.
- Data collection techniques/methods and how this will be administered.
- Analysis and interpretation of data/results research findings.
- Research method is a plan or procedure of how information or data will be collected.
- There are various research methods and these methods are influenced by various factors:
- The research questions which have been raised (hypothesis)

- The objectives of the study
- The available time for undertaking research
- Various constraints.

4.2.2.2 Types of Research Designs

Research can also be classified on the basis of the research designs. For example;

- Case Study Design/Method
- Survey Method
- Experimental Design/ Method
- Historical Method

a). **Case Study Design/Method**

This method is referred to as a case study because it studies an item, event, activity, a phenomena. It involves intensive observation of a single subject in a particular setting. A case may be an individual person, a school, or district.

It is a survey that has been narrowed down or focused on one particular phenomenon. It's main purpose is to study a certain aspect or item intensively so that the researcher can get the background of the study.

It is called a case study because the study focuses on an item or one thing or one phenomenon. An item in this context may be an institution, individuals or a particular community.

Examples of Research Titles Based on a Case Study Method

- To investigate the impact of automation of information services at Kenya National Health Insurance Fund (NHIF) Headquarters, Nairobi.
- Disposal of electronic records in public information centres: a case study of the National Social Security Fund (NSSF) Nairobi.

b). **Survey Design/Method**

Survey research is a study in which data are collected from the members of a sample, for the purpose of estimating one or more population parameters.

A survey can be large or small and it involves a number of items either from the target population (N) or from the population sample (n) from which information is sort. A survey is broader that a case study. It is also expensive to undertake and requires more time.

e.g. A survey to determine the level of information communication Technology (ICT) in Primary schools in Kenya

or

A Survey to determine the damage caused by uncontrolled floods in Nyanza and Western of Kenya.

c). **Experimental Design/Method**

Experimental method involves the use of both the experimental group and the control group.

This method is common in the field of science and technology .It is a type of research that involves manipulation of independent variables to determine their impact on dependent variables.

It is based on both the dependent and independent variables.

An independent variable is the one that is being manipulated or changed by the researcher in order to see or observe how the dependant variable will behaves.

In this context, a dependent variable is the one being observed.

It Involves;

- Experimental Set up
- Procedure
- Observations
- Recording/ Documenting
- Analysis and interpretation
- Conclusions
- Reporting

E.g. Title "The impact of rodents on dry maize in Eastern Province."

d). **Historical Method of Research**

Historical research is the systematic collection and evaluation of data about past events so as to identify causes and effects of those vents in order to understand and explain past events. Some of the methods used are document analysis, interviews, questionnaires.

This is a research study that requires collecting information from the past. It involves studying, understanding and experiencing past events

It involves the discovery and analysis of records of previous events/ occurrences. The conclusions are drawn from the past events which can guide the present and the future.

In this research, the historical researchers (historians, Archaeologists, anthropologists, Academicians etc) seek data that is already available and well maintained.

Sources of History

- Archives/ archival institutions
- Museums
- Theatres
- Cultural centers
- Experiences (Old people)
- Textbooks

Encyclopaedias

 e.g. The effect of colonial administration in Kenya during the pre-independence period.

e). **Descriptive Research**

It's the systematic collection and analysis of data in order to answer questions or test hypotheses concerning current status of a programme, project or activity.

f). **Correlation Studies**

These are studies used to describe in quantitative terms the degree to which two or more variables are related. They involve the collection of data on two or more variables on the same group of subjects and computing a correlation coefficient.

g). **Comparative Studies**

It tries to identify the cause-effect relationships among variables that cannot be manipulated experimentally.

Summary

In this unit, you have learned on the research methodology, which is the process, principle and procedure of identifying a problem and systematically seeking facts that will help one find a solution to the identified problem.

You have also seen at the various methods and designs that a researcher can apply when conducting research. Among the methods discussed are applied research, basic research and evaluative research. Research design has been defined as the structure of research and it is the glue that holds all the elements in a research project together. Examples of research designs include case study design, survey method, experimental design/ method and historical method.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Define the term research design.

b). Explain the characteristics of a scientific research.

c). Demonstrate why researchers prefer use of case studies.

Assessment

a). Distinguish between comparative studies and correlational studies.

b). Explain the qualities of applied research.

c). Highlight situations where pure research may be applied.

Unit 5

Population and Sampling

5.1 Introduction

This unit looks at the meaning of sampling and the sampling procedures that a researcher may adopt when coming up with a sample for his/her study. It also covers both probability and non-probability methods of sampling.

Upon completion of this unit you will be able to:

Outcomes

- Define various terms associated with sampling.
- Explain the various sampling methods.

Terminology

Population: It refers to the entire group of people, events, or things of interest that the researcher wishes to investigate.

Sampling unit: It is a single member of a population.

Sample: A selected no. of elements, objects or people of a defined target population.

Sampling frame: It is the actual list of the objects from which a sample is drawn e.g. student register, telephone directories, mailing lists, stock inventory, files inventory, electronic equipment

Target population: All the members or set of people, events or objects which we wish to generate the results of research.

Study population: It is the aggregation of elements from which the sample is actually selected.

Sampling error: Discrepancy between the characteristics of the population and the characteristics of the sample, though the sample is drawn from that particular population

5.2 Population, Sample and Sampling

5.2.1 Population

It is defined as the aggregate of all study elements. It refers to the entire group of people, events, or things of interest that the researcher wishes to investigate.

Target population

A target population or the universe in research refers to all the members or set of people, events or objects which we wish to generate the results of research.

Study Population

A study population is the aggregation of elements from which the sample is actually selected.

Population target/study is represented by N e.g. N=50.

Note: The members/items of the population are called unit of analysis = N. An element is a single member of the population and the population frame is a listing of all the elements in the population from which the sample is drawn.

It's any group of institutions, people or objectives that have at least one characteristic in common. It is the aggregate of all cases that conform to some designated set of specifications. A single member of a population is referred to as a sampling unit .It is the possible group from whom information can be obtained.

Sample

A sample is a fraction of the population. It also refers to a selected no. of elements, objects or people of a defined target population.

The units/members of a sample are called units of analysis represented by n.

The selection of a sample is based on a sampling technique/methods.

A sample is selected from a sampling frame.

Sampling frame

It is defined as the actual list of the objects from which a sample is drawn e.g. Student register, Telephone directories, Mailing lists, Stock inventory, Files inventory, electronic equipment etc

The sample selected must be as representative as possible of the population from, which it is drawn.

5.2.2 Importance of sampling

- It is less time consuming hence studies completed within a short time.
- It is less costly.
- It may be the only practical method of data collection like where investigation necessitates destruction of the item to test its strength.
- It may be the only practical way of collecting data where the population is extremely large.
- It assists in quality control i.e. it enables more accurate measurements for a sample study.

- It enables in estimating the sampling errors and assists in obtaining information on some characteristics of the population.

5.3 Determining a sample size

Krecie and Morgan (1970) have produced the following table for determining the sample size

Table 1: Sample sizes for different population sizes

Population Size	Sample Size
10	10
20	19
30	28
40	35
50	44
60	52
70	59
80	66
90	73
100	80
150	108
200	132
250	162
300	169
400	196
1,500	306
2,000	322
3,000	341
4,000	351
5,000	357
10,000	370
20,000	377

| 50,000 | 381 |
| 100,000 | 384 |

There are other methods of identifying samples that exist depending on one's school of thought. In selecting the sample, start by defining the study population, decide on the sampling method to use and then select the sample.

5.4 Sampling Procedure

Sampling is that process of selecting a part of the population to represent the whole population.

It is important because it is impractical and uneconomical to involve all members of the population in a research project.

Researchers rely on data obtained from a sample population which is the representation of the entire population.

A sample must be representative meaning that it should have the exact/ same proportions as the population from which it was drawn but in smaller numbers.

Sampling gives us a sample which is the likeness of the population with similar characteristics.

5.4.1 Steps in sampling

Sampling procedure involves the following steps;

a). Determining the Relevant Population

 It involves defining the population and the element of concern.

b).Select the Sampling Frame

This is a list that represents all the elements of the population. If the list is available, it should be used as the real sampling frame.

c). Choose Between Probability Sampling and Non Probability

It is a method of drawing a portion of a population so that each member of the target population has a known and non zero chance of being selected into the sample.

It means that elements in the target population have an unknown chance of being selected into the sample. It is based on subjective judgement and is biased and that some members have more chance of being selected than others.

Random Sampling

It is based on the laws of probability i.e. they give each element in the target population an equal chance of being included as selected as a member of the sample

Non random sampling

Non random sampling means that all elements within a targeted population do not have an equal chance of being selected.

d). Select the Sampling Method

It is the stage that involves choosing the actual elements of the study sample based on the sampling method which you selected.

e). Determine the Necessary Size of the Sample

A sample should be large enough to represent a population.

f). Selection of the sample and data collection

It involves selecting the actual individual elements based on the agreed procedure and then collecting data based on the data collection methods such as interviews, questionnaire observations etc.

g).Validation of the sample

This stage is related to the stage which involves determining if the selected sample is representative of the target population.

5.5 Sampling Techniques/Methods

5.5.1 Probability Sampling Methods

It is a method of drawing a portion of a population so that each member of the target population has a known and non zero chance of being selected into the sample.

Examples include;

- Simple random sampling
- Stratified sampling
- Cluster sampling
- Purposive sampling
- Multi stage random sampling

a). **Simple Random Sampling**

This is a method or a technique where each member of the target population has the same chance of inclusion in the sample. It is one of the most commonly used and known sampling method.

It is most suitable when the targeted population has uniform characteristics or it's homogenous. In a homogenous population, there are no distinguishable subgroups or strata and that the characteristics of the population are spread throughout the population.

In this method, all the units of analysis in the sampling from/in the register are identified and each unit is given a number. Consequently the numbers are placed in a box, mixed well and then picked at random.

The numbers which are picked are the ones which are required by the researcher and they form the required sample. However the selection can also be done by means of a table of random numbers which can be generated either manually or by use of computer software programme.

b). **Stratified Sampling Method**

This method is appropriate in a research study that requires comparisons between various subgroups/ strata.

The method involves the identification of various subgroups /strata. The subgroups/ strata are based on various variables or parameters e.g. Age, Sex, Education level, Geographical location etc

This means that the members of a particular stratum will be more homogenous or alike than the entire population

The sample size is determined from each separate stratum and this can be done using the random sampling method.

The final sample population is obtained by combining all the samples selected from each of the stratum. The final sample must be a representative of the entire population.

c). **Systematic Sampling Method**

It involves picking sample elements form the population at regular intervals. It is based on the sampling interval.

The sampling interval is the standard distance between elements selected in the sample.

e.g. S1 = N

              n   where

S1 = Sampling Interval

N = Target Population

n = Sample Size desired

Case 1

Assume N=100 and n=10,the S1 will equals to 10 meaning that the researcher picks every 10th item in the sampling frame starting with the first one until he gets the required sample.

d). **Cluster Sampling**

This method is used in large scale survey where it is impossible to obtain a comprehensive sampling frame. It involves drawing pre-existing heterogeneous groups called clusters. The members of the selected clusters become the effectual sample and they are included in the sample.

In this method, it is the group/cluster that is selected randomly and not the individual members of a cluster.

It the type of sampling in which the researcher selects a group and every member in the group participates in the research.

Examples include:

Cluster of schools, hospitals, municipal Councils, Town Councils etc.

e). **Purposive Sampling Method**

This is a deliberate non random method of sampling. It aims at selecting a sample of people, setting and events with pre-determined characteristics.

The sample elements are chosen because they fulfill a certain criteria.

In the selection of the sample, the researcher relies on peoples experience and previous research findings.

It is a common method used for case studies.

It involves hand picking cases or subjects because they are informative and have the required characteristics.

f). **Multi Stage Random Sample**

It's the multi-stage sampling and involves;

- Randomly select a given number of states/provinces/districts from the list of all states/provinces/districts.
- Randomly select from within each chosen state/province/district schools from the list of all schools of the defined type.
- Randomly select from within chosen school individuals from the list of all individuals of the defined types.

5.5.2 Non-Probability Methods

The elements in the target population have an unknown chance of being selected into the sample. A non probability sample is based on subjective judgment and is biased in the sense that some members of the target population have more chance of being selected than others.

- Quota sampling
- Judgement sampling/purposive
- Convenience sampling

a). **Convenience Sampling Method**

This is a method that includes any one who is at hand. This implies that the sample is picked on the bases of convenience e.g. people who are near the researcher, Items of individuals who are readily available for the research purpose, people who are at a place at a particular time who you can interrogate for the purpose of research., Organizations which are close to the researchers.

b). **Accidental Sampling Technique**

This is a method that includes any one who is at hand.

c). **Quota Sampling**

Sample members are drawn from the various target population strata, e.g. untrained teachers, graduate teachers, It involves assigning a quota or proportions of kinds of people to interviewers.

d). **Judgement Sampling**

Sample selection depends on the subjective judgment of the researcher but it should be representative of the population.

Summary

In this unit, you learned about sampling as process of selecting a part of the population to represent the whole population. Sampling is important since it is less time consuming, less costly and the only practical method of data collection like where investigation necessitates destruction of the item to test its strength.

This unit also covers how to determine your target population, study population and eventually sample size for a study.

In sampling, there are steps involved in sampling. They include determining the relevant population, selecting the sampling frame and choosing between probability sampling and non probability; selecting the sampling method; determining the necessary size of the sample; selecting of the sample and data collection.

There are probability and non-probability sampling methods. Probability methods discussed include simple random sampling, stratified sampling, cluster sampling, purposive sampling, multi-stage random sampling.

Non-probability methods comprise of quota sampling, judgment purposive sampling and convenience sampling.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Distinguish between quota sampling and cluster sampling.

b). Describe the steps that you would follow to determine a sample.

c). Explain the term sampling frame.

Assessment

a). Highlight the advantages of sampling in research.

b). Analyze the characteristics of a good sample design.

c).Explain the reasons why many researcher favour stratified sampling.

Unit 6

Data Collection Methods

6.1 Introduction

The unit examines the various methods that are used to collect data from respondents. It also gives the advantages of using each of the method in collection of data.

Upon completion of this unit you will be able to:

Outcomes

- Explain various data collection methods/tools.
- Apply various data collection methods/tools.

Terminology

Questionnaire: A list of structured questions used by a researcher as a tool for collection of data.

Response rate: It refers to the percentage of subjects who respond to questionnaires.

Interview: It is a face to face encounter or telephone conversation with the respondent, for data.

Interview schedule: It is a set of questions written down, that the interviewer asks during the interview

6.2 Data Collection Methods/Tools

Data collection is the gathering of specific information aimed at proving or refuting some facts. In data collection, the researcher must have a clear vision of the instruments to be used, the respondents and the selected area. It allows for dissemination of accurate information and development of meaningful programmes.

These are tools/instruments used by researchers in gathering or collecting data. Data collection is done after the sample has been selected and validated which means that the data is collected from the samples.

Primary data is that data collected from the original sources of information e.g. data collected especially from individuals/persons that form the sample or respondents through questionnaires, interviews, focused group discussions, observation and experimental studies.

Secondary Data is that data that has been collected by others that a researcher intends to use e.g. data collected from textbooks, reports, etc. The secondary sources of data or the secondary

information sources are data neither collected directly by the user nor specifically for the user and involves gathering data that already has been collected by someone else.

It involves the collection and analysis of published material and information from internal sources. Data is collected from diverse sources of documents or electronically stored information.

6.2.1 Examples of Data Collection Tools

- Questionnaires – Physical, Postal Questionnaires
- Interviews – Face to face, Telephone interviews, electronic interviews e.g. videoconferencing.
- Observation – Direct observation
- Documentary Sources

6.2.1.1 Questionnaire

It is a printed/typed list of questions where the answers are to be put. It is a set of pre-determined questions by the researcher and based on the objectives of the study.

The study objectives must be clear to the researcher before the questionnaire is formulated. A questionnaire can either be sent to the respondent by post hence postal questionnaire or delivered by hand and in both cases the details of the respondent must be available.

The questionnaire should also indicate the contact details of the researcher for the respondent to be able to deliver it accordingly. It can also be sent electronically and returned electronically and in such a case, the researcher must print the final hard copy.

At the end of compiling the final research report, a questionnaire should be attached as an appendix. A questionnaire as a tool for data collection should be designed in a professional manner.

Types of questions used in questionnaires

The items/questions of the questionnaire may be either closed ended or open ended. This means that a questionnaire may take a variety of questions.

a). Open ended questions

Open ended questions allow the respondent to respond in his/her own words. These questions stimulate the thinking of the respondent. However these questions present problems during analysis. Example;

List the factors constraining the provision of services to this special group, highlighting the three most critical of the identified factors.

(i)_____

(ii)._____

(iii)._____

b). Closed ended questions

Closed ended questions give the respondents alternatives responses to choose from.

They are considered to have multiple choices. These questions are easy to analyze.

e.g. Does the population have any special needs population

    o Yes

    o No

Characteristics of a good questionnaire

    a) It should have clear instructions which are well understood by the respondents.

    b) It should be simple and not ambiguous.

    c) Questions should not be technical and should not involve calculations or test of memory.

    d) Questions where necessary should have simple answer categories.

    e) Questions should flow in logical and consistent manner (they should be formulated on the basis of study/research objectives)

    f) Questionnaire can have both open ended questions and closed ended questions.

    g) Closed ended questions are easy to analyze.

    h) Open ended questions are time consuming during analysis because of the variety of responses given.

Advantages of Questionnaire

    i.   Cheap and economical to implement

    ii.   Provides the respondents with freedom at the stage of completing/filling.

    iii.   Questionnaires can reach a large group of respondents within a short time and with little costs.

    iv.   Biasness is avoided.

    v.   Honest answers may be given.

    vi.   Respondents have adequate time to consult documents or other people if questions require doing so.

    vii.   There is enough time to reflect on before answering questions.

Disadvantages of questionnaire

    i.   Constructing a questionnaire is not an easy task.

    ii.   Only applicable to literate samples/respondents.

    iii.   Researcher has no control over the person who fills out the questionnaire.

    iv.   No opportunity for the respondents to seek and obtain clarification about ambiguous questions.

    v.   It is difficult to obtain an adequate response rate.

    vi.   Questionnaires cannot be filled out by illiterate people and those who don not know the language.

    vii. Some respondents may skip questions they consider difficult sensitive and controversial.

Note that once Questionnaires are constructed, approved by the project supervisor, they are then administered to the sample respondents either delivered physically or sent by post or by electronic mail. The questionnaires are later analyzed.

6.2.1.2 Interview Method

It is a data collection method that involves an interviewer and interviewee engagement. It can also involve an interviewee visiting the respondent at home or in an office or any other convenient place as agreed upon by the two parties.

The interviewer should be trained in order to handle an interview professionally. The interview place should be well arranged (conducive environment) and that two parties must have prior arrangements.

An interview is based on specific questions which are reflected in an interview schedule/questionnaire.

Interviews are mostly used to clarify what has not been collected through the use of questionnaires.

Types of interviews

a). **Face to Face Interview**

It involves the researcher and the respondent or the interviewer and the interviewee.

It gives both parties an opportunity to clarify questions so that they are fully understood. The questions in the interview schedule should be clear, simple and direct. The number of questions should be reasonable.

It is used to get clarifications on the questions reflected in the questionnaire.

b). **Telephone Interview**

It involves interviewing the respondent through the telephone. It is a common method in the media industry used by journalists/reporters.

It can be expensive for it requires telephone service and other telecom services even though it depends on the geographical scope.

c). **Online Conversation**

This is interviewing the respondent online and getting the response online.

d). **Informal/Street Interview**

It is an interview that is accidental/incidental in approach and its not based on any sample as the others. People are interviewed at random.

You should record or document the responses appropriately in an interview.

e). **Teleconferencing Interviews**

Distance interviewing.

Advantages of Interview

i. Direct interaction with the respondent
ii. Exhaustive and thorough
iii. Helps respondents to seek clarification
iv. They provide in-depth data which is not possible to get using a questionnaire.
v. It is possible to obtain data required to meet specific objectives of the study.
vi. Interviewer can clarify the questions hence get relevant responses.
vii. They are more flexible than questionnaires.
viii. Very sensitive and personal information can be extracted from the respondent.
ix. Respondents can give more complete and honest information.
x. More information may be obtained by using probing questions.

Disadvantages of interviews

i. Time consuming
ii. Expensive and involving.
iii. They are more expensive.
iv. Interviews require high level of skill i.e. requires communication and interpersonal skills.
v. Interviewers need to be trained to avoid biasness.
vi. Since interviews are adaptable, flexible and show concern for human interaction, they often introduce biasness and subjectivity into the study.

vii.   They are time consuming hence involve smaller samples.

viii.   Responses may be influenced by the respondents' reaction to the interviewer.

6.2.1.3 Direct/Systematic Observation

It gives the most accurate data collection, because it involves direct involvement or direct observation of events as they happen. The observer can either be a participant or non participant. The observations are appropriately recorded as a backup to the interview and questionnaire findings.

Advantages of observation

i.   Observe true events as they happen.

ii.   Researcher avoids report bias from someone else.

iii.   It overcomes language barriers.

iv.   Researcher is able to observe natural behaviour.

v.   Observation can be carried out any time.

vi.   You may obtain data from those who cannot give verbal reports.

vii.   Disadvantages of observation

viii.   Individuals' impression creation

ix.   Objective opinion on the side of the observer.

x.   Misinterpretation of what is being observed i.e. biasness.

xi.   Inability to observe some aspects of behaviour.

xii.   It only tells what happened and not how and why it happened.

xiii.   It is subjective in analysis of data and arriving at conclusions.

xiv.   Observation may not be applicable to many social aspects of life.

6.2.1.4 Verification of Documentary Sources

It is a method that involves the review of both the primary and secondary sources of information. Primary sources contain the original information and secondary sources contain documented information.

Verification of documentary sources involves a thorough scrutiny for factual data from organizational documents like registers, reports, records, forms and other important operational documents.

Verification is the use of third party information or documentation to confirm the accuracy of statements made. A researcher uses documents, whenever possible, as the primary source of verification.

The purpose of the gathering of documentary sources is to allow a researcher to have a better idea of what has been said or written about the subject. It is not for the intellectual beauty of the matter which one should do it. The search for documentary sources should allow an individual to put a more adequate glance at the data he will later gather.

Note that all the data collection tools are attached in the final report as appendices.

Summary

In this unit, you learned about the various instruments/tools that a researcher may use to collect data for his study. Data collection is the gathering of specific information aimed at proving or refuting some facts.

Examples of data collection tools discussed include questionnaires, interviews, observation and verification of documentary sources. The characteristics, advantages and disadvantages of each of these methods

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Identify the advantages of interviews.

b). Highlight the characteristics of a good questionnaire.

c). Examine the disadvantages of observation method.

Assessment

a). Highlight the advantages of using questionnaire.

b). Identify the forms of interviews that can be used in research.

c). Discussion verification of documentary sources, as a method of data collection.

Unit 7

Data Analysis and Presentation

7.1 Introduction

This unit exposes the trainee on data analysis, interpretation and presentation. It also discusses the statistical techniques used in analyzing data.

Upon completion of this unit you will be able to:

Outcomes

- Analyze and present data.
- Distinguish between descriptive and inferential statistics.

Terminology

Data Analysis: It involves summarizing and organizing data collected in a manner that they answer the research questions.

Coding: It is the process of assigning numerals or other symbols to answers so that responses can be put into a limited number of categories or classes.

Tabulation: It is the process of summarizing raw data and displaying it in a compact form i.e. in the form of statistical tables, for further analysis.

Data interpretation refers to the task of drawing inferences from the collected facts after an analytical or experimental study.

7.2 Data Analysis

Data obtained from the field in raw form is difficult to interpret and hence it must be cleaned, coded, key punched into a computer and analyzed. Researchers are able to make sense of the data from the results of such analysis. Data can be analyzed through the use of percentages, mean scores, standard deviations and simple analysis of variance.

Data analysis refers to the processing of statistics or raw data in order to create information which is meaningful for a particular purpose. It refers to the process of examining what has been collected in a survey or experiment and making deductions and inferences.

The data collected must be analyzed, interpreted and presented appropriately.

The data collected is stored either in paper form or electronically and later the researcher should reflect on the statistical software package that will be relevant in data analysis

Data obtained from the field in raw form/statistics is difficult to interpret and it requires some organization in order to give it some meaning.

The data must be systematically organized in a manner that facilitates analysis.

The researcher must put data in a form where observations can be seen clearly so as to make comparisons and interpretations easy.

The raw data must be processed in some way in order to create a meaning (raw data must be converted into information which has some meaning).

7.2.1 Data processing and analysis operations

a). **Editing**

It is the process of examining the collected raw data to detect errors and omissions, hence correct them. It involves scrutiny of the completed questionnaire and interview schedules. It is done to ensure accuracy and consistency in facts gathered.

b). **Coding**

It is the process of assigning numerals or other symbols to answers so that responses can be put into a limited number of categories or classes. It is normally decided at the designing stage of the questionnaire.

c). **Classification**

It is the process of arranging data in groups or classes on the basis of common characteristics. Data with a common characteristic are placed in one class., hence the entire data gets divided into a number f groups. Classification may be done in two ways namely;

- Classification according attributes in descriptive characteristics.
- Data classified according attributes e.g. literacy, sex, honesty or weight, height, income etc.
- Classification according to class intervals.

It mainly arises with numerical data i.e. quantitative phenomenon which can be measured through some statistical units e.g. data relating to income production, age, weigh etc. Such data can be classified on the basis of class intervals.

d). **Tabulation**

It is the process of summarizing raw data and displaying it in a compact form i.e. in the form of statistical tables, for further analysis. Tabulation is an orderly arrangement of data in columns and rows.

Tabulation may be done by hand or electronic devices. Choice of the method of tabulation depends on size and type of study, cost considerations, time pressures and availability of tabulating machines or computers.

Importance of Tabulation

- It conserves space and reduces explanatory and descriptive statement to a minimum.
- It facilitates the process of comparison.
- It facilitates the summation of items and the detection of errors and omissions.
- It provides a basis for various statistical computations.

Principles of tabulation

Principles of tabulation and particularly of constructing statistical tables include;

- Every table should have a clear concise and adequate title to make the table understandable without reference to the text.
- Every table should be given a distinct number to facilitate easy reference.
- Column and row headings of the table should be clear and brief.
- Indicate the units of measurement under each heading or sub-heading.
- Separate columns from one another, by lines which make the table more readable and attractive.
- Columns whose data are to be compared should be kept side by side. Similarly, percentage and /or averages must also be kept close to the data.
- Abbreviations should be avoided if possible.
- Table should be made as logical, accurate and simple as possible.

7.3 Data Interpretation

Data interpretation refers to the task of drawing inferences from the collected facts after an analytical or experimental study. It is a search for broader meaning of research findings.

It refers to attaching meaning and significance to the analysis, explaining descriptive patterns and looking for relationships and linkages among descriptive dimensions.

The interpretation of data is facilitated by how data is analyzed and presented. It means giving an adequate exposition or the meaning of the results presented.

Interpretation of data involves constructing a logical scientific argument that explains the data. Scientific interpretations are neither absolute truth nor personal opinion: they are inferences, suggestions, or hypotheses about what the data mean, based on a foundation of scientific knowledge and individual expertise.

Generally, data collection is the systematic recording of information; data analysis involves working to uncover patterns and trends in data sets while data interpretation involves explaining those patterns and trends.

7.3.1 Importance of interpretation

Usefulness and utility of research findings are based on proper interpretation of data. Interpretation is important because;

a) It enables the researcher to well understand the abstract principle that works under his findings. It may link up his findings with those of other studies hence the concrete world events.

b) It leads to the establishment of exploratory concepts that can serve as a guide for future research studies. It opens new venues of intellectual adventure and stimulates the quest for more knowledge.

c) Researcher is able to appreciate why his findings are what they are and can convince others on the real significance of his research findings.

d) It may lead to transition from exploratory to experimental research. Exploratory research study results into hypothesis for experimental research...

7.3.2 Technique of interpretation

Interpretation requires great skill and a researcher may even seek guidance from experts for accomplishing the task of interpretation.

Steps in interpretation

They include;

a) Researcher must give reasonable explanations of the relations which he has found and must interpret the lines of relationship.

b) Any extra information, if collected during the study, must be considered while interpreting the final results of research study may enable you understand the problem under study.

c) Before final interpretation, consult a person with insight into the study and who is frank and honest and will not hesitate to point out omissions and errors in logical argumentation.

d) Accomplish the task of interpretation only after considering all relevant factors affecting the problem to avoid false generalization.

e) Avoid being in a hurry while interpreting results since conclusions appearing to be all right at the beginning, may not all be accurate.

7.3.3 Precautions in data interpretation

Remember wrong interpretation may lead to inaccurate conclusions. Interpretation should be accomplished with patience and impartial manner and correctly.

The researcher must pay attention to the following points for correct interpretation;

a) He must at the beginning be satisfied that the data is appropriate, trustworthy and adequate for drawing inferences.

b) Be satisfied that the data reflects good homogeneity (items with similar characteristics).

c) Be satisfied that proper analysis has been done through statistical methods.

d) Researcher must remain cautious about the errors that can possibly arise in the process of interpreting results. Errors can arise due to false generalization or wrong interpretation of statistical measures.

e) Researcher must always keep in view that the task of interpretation is very much associated with analysis and cannot be distinctly separated.

f) Beyond making sensitive observations of relevant occurrences, he must also identify and ascertain the factors that may be initially hidden to the eye i.e. not clear before.

g) Avoid broad generalization because research may be restricted to particular conditions.

h) Researcher must remember that in the course of a research study, there should be constant interaction between initial hypothesis, empirical observation and theoretical conceptions.

7.4 Data Presentation

Data presentation involves displaying the collected data using various formats in order to help simply large amounts of data in a sensible way. It reduces lots of data into a simpler summary.

Researchers can present data after analysis in various ways such as using statistical techniques, graphical techniques and using a combination of both.

7.4.1 Statistical Techniques

Statistics are a set of mathematical methods used to extract and clarify information from observed data. Statistics generate simple numbers to describe distributions, either grouped or ungrouped
It's the science of organizing, describing and analyzing quantitative data. Data is the information that a researcher gathers for his/her study. Statistics refer to numerical facts e.g. 1,2,3,4,5.. Primary data is the data or the inf. that a researcher obtains from the field, from the subjects in the sample presented in frequency distributions.

Secondary data is the information a researcher obtains from the research articles, books and other secondary sources. It is also a group of methods used to collect, analyze, present and interpret data to make decisions.

Once the questionnaire or other measuring instruments have been administered, the mass of raw data collected must systematically be organized in a manner that facilitates analysis. Quantitative or empirical analysis involves allocating numbers to responses 1 and 0 and vice versa.

It's common with close ended questions but for the open ended questions, the responses are placed into given categories and assigned numbers. To permit quantitative analysis, data must be converted to numerical codes representing attributes or measurements or variables. The conversion of data into numerical codes is called coding.

Qualitative analysis means non-empirical analysis. The first step in data analysis is to describe or summarize the data using descriptive statistics. There are various types of statistical techniques or data analysis techniques which are used to summarize the data. e.g. Descriptive statistics, Inferential statistics, Test statistics.

7.4.1.1 Descriptive Statistics

They help the researcher to meaningfully describe a distribution of scores or measurements using a few indices or statistics.

Descriptive statistics consist of methods for organizing, displaying and describing data by using tables, graphs, etc and summary measures like the mean, medium, mode, standard deviation.

It is used by researchers to describe the data that has been collected from a sample. It's used to summarize or describe data and help a researcher to meaningfully describe a distribution of scores or measurements. It comprises of the measures of central tendency and measures of variability or dispersion.

7.4.1.1.1 Measures of Central Tendency

The measures of central tendency are used to determine the typical or expected score or measure from a sample of measurements or a group of scores in a study. The commonly used measures of central tendency are the mean, mode and median.

a). Mean of Distribution.

It's the average of a set of scores or measurements and it's the most frequently used measure of central tendency.

It involves:

•	Calculating or summarizing data by calculating the mean or the average of a distribution. e.g. age of five (5) students recorded as below 22 years, 18 years, 28 years, 30 years, 29 years

Mean = Sum of all the values in distribution data set /Actual No. of values=n

Table1: Students' Age Distribution

Age of Students (yrs) x	Frequency (F)	FX
15	2	30
20	3	60
22	1	22
28	1	28
30	1	30
40	1	40

Ef =9   Efx =210

To calculate the average or mean of a frequency distribution, one must get a column of f multiplied by x or values and divide the totals of f multiplied by x with the totals of f or

Mean/Average = Sum of all f x/Sum of f or $\sum fx/\sum f$

b). **Mode of Distribution**

Mode refers to the item that occurs most in a distribution or the item with the highest frequency e.g. Age of students.

20 yrs, 15 yrs, 20 yrs, 30 yrs, 40 yrs, 15 yrs

20 yrs, 22 yrs, 28 yrs

Mode = 20 years

Mode is the most commonly attained measurement or value. The measurement that appears most in a particular variable among a sample of subjects. It is established by examining a set of scores and identifying the score that occurs most frequently. The variable could be no. of people in a family.

c). **Median**

In statistics, the median refers to the score which appears at the center of a distribution when the data is arranged in a ranked order or ascending order.

The formula for calculation the median in a data distribution

=Median = (n+1)th term/2

where

n= Total no. of items in a distribution

To determine the median like in;

15, 15, 20, 20, 20, 22, 28, 30, 40

Median = 20 years

n= 9 (No. of items)

= (9+1) = 10/2 = 5th term =20 years

7.4.1.1.2 Measures of Variability/Dispersion.

Measures of variability help to describe a distribution of scores in more details and give a measure of how scores differ among themselves in a distribution. Variability is the distribution of scores around a particular central score or value.

The central score in statistics is the mean of the distribution and hence it's the dispersion of scores around the mean of the distribution. These measures help the researcher to see how spread out the scores or measures for each variable are.

They provide information regarding the extent of individual differences on a given variable. They comprise of the range, standard deviation, variance etc.

a). **Range**

It's the difference between the highest score and the lowest score in a certain data distribution. If high, it means the scores are spread out and if low means they are not spread out.

b). **Standard Deviation**

Standard deviation is the extent to which the score in a distribution deviates from the mean or average. If the value or the SD is too small, it means that the variance is small and hence the scores are close together. It involves subtracting the mean from each score to obtain the deviation. Standard deviation is the square root of the variance. Once we square each deviation from the mean, sum the squared deviations and then divide the total by the degrees of freedom, we get the variance.

c). **Coefficient of Variability (or Variation)**

The coefficient of variability is calculated by expressing the standard deviation as a percentage of the mean.

7.4.1.2 Inferential Statistics

Deal with inferences about population based on the results obtained from the samples. Inferential statistics help to generalize the results from samples to population. Concerned with determining how likely it is for the results obtained from a sample to be similar to results expected from the entire population-test of hypothesis.

Other techniques of data presentation, organization or analysis include;

a). **The Use of Frequency Distribution Tables**

It shows the distribution of scores in a sample for a specific variable. It gives a record of the times a score or a response occurs.

It involves dividing the scores or data into classes and identifying the number of items that fall in each class which is referred to as the class frequency. This approach involves the tabulation of data into classes and determining the respective frequencies of each class.

e.g. **Frequency distribution showing the age of students in a certain school**

	AGE	SIZE
Data	25-30	15
	15-20	25

30-35   10

10-15   5

Age of students (Yrs)	Frequency (f)	Percentage
10-15	5	5/55 X100
15-20	25	25/55 X100
20-25	-	-
25-30	15	15/55 X 100
30 – 35	20	20/55 X100
35 – 40	-	-

Modal Class= Class with the highest frequency = 15-20 years

b). **Percentage Comparison**

It involves comparing dependent and independent variables in a distribution and finally calculating the respective percentages. It involves expressing an item or variable against the total and multiplying by 100%.It's a proportion of a sub group to the total group or sample and ranges from 0% to 100%.

Table 1: The methods of acquisition used in organization A.

Method of acquisition	Respondent	Percentage response
A	3/5	60%
B	2/5	40%
C	1/5	20%
D	4/5	80%

c) **Ranking or Weighting Techniques**

It occurs when the respondents are required to show their references for certain things based on weighting scale/criteria.

e.g. A group of seven (7) librarians were asked to show their references for three common encyclopaedias namely:

Encyclopaedia Britannica 1 = 3 points

Encyclopaedia Americana 2 = 2 points

Everyman's encyclopaedia 3 = 1 points

Items	Librarians							
	A	B	C	D	E	F	G	TOTAL
Britannica	1	1	1	2	1	3	1	10
Americana	2	2	2	3	3	2	2	16
Everyman's	3	3	2	1	2	1	3	15

d).Graphical **Presentation**

There are various ways of a presenting data which has already been analyzed. Such are like:

•   Tables

•   Graphs

•   Diagrams e.g. Pie charts, pictograms, scatter diagrams etc

•   Charts e.g. bar charts

•   Polygons etc

i). **Tables**

It is two dimensional tool with rows and columns which are labeled and used to compare sets of data. The table should have a heading.

Table 1: Distribution of Students Marks

Courses	Student Marks		
	50-60	60-70	70-80
Mathematics	5	10	50
Chemistry	10	25	70
Literature	20	30	61
Physics	15	45	48

ii). **Graphs**

A graph has both the x axis or horizontal axis and vertical or y axis. It also has a scale and must be labeled. Scores are represented along the horizontal axis and frequencies along the vertical axis.

iii). **Pie Charts**

It's a circle which is represented by 360 degrees or 100% and it involves the calculation of percentages and degrees.

A pie chart must be drawn to scale, and well labeled.

iv). **Bar Charts**

It comprises of bars which are separated with equal distance.

v). Histograms

It comprises of a series of adjacent bars and they are not separated.

vi).Frequency **Polygon**

It is a many sided figure and requires establishing the mid point of the class interval and plot the mid points against the frequencies and join the points using straight lines.

7.5 Summary of the Findings, Conclusions and Recommendations

It helps the researcher to summarize the study undertaken, to conclude and make recommendations based on the study findings. Summary must reflect accurately the body of one's report. Recommendations must be consistent with the study purpose and objectives and should be practical and achievable.

It summarizes the findings (entire study), highlights the conclusion and recommendations.

The summary is a brief statement of research findings. The researcher should identify the findings of the study and discuss them briefly.

Conclusions are based on facts of findings. The conclusion section should be very brief and should indicate what the study results reaffirm and should briefly discuss some of the strategies highlighted by the respondents. The researcher should clearly state how the study has contributed to knowledge. Recommendations provide possible solution(s) to the problem under study. It also gives a room for further researcher/study.

Summary

In this unit, you learned how to analyze and interpret data collected from the respondents.

Data analysis is the processing of statistics or raw data in order to create information which is meaningful for a particular purpose. Data processing and analysis operations include editing, coding, classification and tabulation.

Data interpretation refers to the task of drawing inferences from the collected facts after an analytical or experimental study. It is important because it enables the researcher to well understand the abstract principle that works under his findings and may lead to transition from exploratory to experimental research.

You also learned the statistical techniques used to analyze the data. Some of the techniques include descriptive and inferential statistics.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Define data analysis.

b). Identify the reasons for interpreting data.

c). Differentiate between descriptive and inferential statistics.

Assessment

a). Explain the importance of tabulation as data analysis operation.

b). Identify various kinds of diagrams that you can use to organize and present your data.

c). Highlight the operations that you may apply in processing your data.

Unit 8

Research Report Components

8.1 Introduction

Research is not complete without a report. A research report is written to highlight all issues undertaken during the research and the data findings.

Upon completion of this unit you will be able to:

Outcomes

- Explain all the components of a research report.
- Write a research report.

Terminology

Abstract: It is the summary of the research report.

Research Report: It is a document communicating to others, the generalization and findings of the research study.

Appendices: It contains information that the researcher does not deem necessary to include in the body of the report.

Title: It is a short and simple yet informative statement that indicates the major variables of the research, the target population and if possible the geographical location of the research.

Declaration: It is a declaration that the research report or work is his original work and has never been presented for examination by another person.

Dedication: It is a statement in recognition of a person or persons deemed special in the life of the researcher.

Acknowledgements: It is the page where a researcher mentions and acknowledges the contribution or help of other people in his research.

Literature Review: It is a researcher's critique of findings from other studies done in related areas.

Methodology: It gives details regarding the procedures used in conducting the study.

8.2 Report Writing

Report writing involves developing a good, effective and concise document detailing all the contents of your study. It is an art form in itself. In many research projects, researchers sometimes need to write multiple reports that present the results at different levels of detail for different audiences.

8.2.1 Significance of Report Writing

- It is a major component of the research study for the research task since research remains incomplete till report has been written or presented.
- It helps in communicating to others the generalization and findings of the research study.
- It ensures storage of the knowledge, findings obtained through research study.

8.2.2 Different Steps in Writing Research Report

Writing of report requires skill and utmost care.

Steps involved include;

a). **Logical analysis of the subject matter.** It involves either logical or chronological development of a subject (i.e. logical; which involves development of material from simple to complex structures) and chronological which involves development of subject based on time or occurrence.

b). **Preparation of the final outline.**

It involves putting a framework upon which the report is written. It aids logical organization of material and reminds the points to be stressed or emphasized.

c). **Preparation of the rough draft**

It is the rough writing of procedures adopted in collection of data, challenges faced, technique of analysis adopted, broad finding and generalizations and suggestions provided.

 d). **Rewriting and polishing of the rough draft**

It involves revising the rough draft, checking the report for weaknesses in logical development or presentation and also whether the materials presented have unity, cohesion, and consistency. It also involves checking the grammar, spelling and usage of words.

e). **Preparation of bibliography**

It involves appending a bibliography to the research report. A bibliography is a list of books consulted when conducting the research.

The bibliography must contain all books consulted by a researcher and should be arranged alphabetically. The method chosen to present bibliography must be consistent.

f). **Writing the final draft**

It should be written in a concise and objective style and in simple language. A researcher should avoid technical jargon and vague (meaningless) expressions e.g. 'it seems', 'there may be'.

Research report should not be dull but must excite people and maintain interest. It must show originality and should attempt to solve some intellectual problem and must contribute to the solution and add knowledge to reader and researcher.

8.2.3 Layout of the Research Report

A). Preliminary pages

Preliminary pages include;

i). **Title**

It should be short and simple yet informative. It should also give an indication of the major variables of the research, the target population and if possible the geographical location of the research.

ii). **Declaration**

Researcher gives declaration that the research report or work is his original work and has never been presented for examination by another person. It contains researcher's name, admission number, and signature and also the name of the research supervisor, his signature and date research report is received.

iii). **Dedication**

It is a statement in recognition of a person or persons deemed special in the life of the researcher.

iv). **Acknowledgements**

It is the page where a researcher mentions and acknowledges the contribution or help of other people in his research.

v). **Abstract**

It is the summary of the research report. A good abstract presents the reader with the purpose of the study, the population studied, the major results and conclusion of the study. It should not be more than half a page long.

vi). **Table of contents**

It is like a map that guides the readers in locating various sections of the research report. It contains the chapter headings, main headings and sub-headings and the corresponding page of each in the body of the document.

vii). **List of tables and figures**

It follows the same format as the table of contents. The number and title of each table appearing in the body of the report is listed together with the corresponding number.

B). Introduction section

It contains the following components;

i). Background of the study.

ii). The problem statement.

iii). Objectives of the research

iv). Hypothesis or research questions.

v). Significance of the study.

v). Limitations of the study.

C). Literature Review

It is a researcher's critique of findings from other studies done in related areas. Literature review should be relevant to the topic under study.

D). Methodology

It gives details regarding the procedures used in conducting the study. Issues discussed include the population, sample and sampling techniques, the research design, description of tools used in collecting data and analyzing data.

E). Results and discussion section (Data findings, analysis and interpretation)

It presents the results of the data analysis in a systematic way. The researcher uses statistics to summarize results and to make generalizations on the population.

F). Summary, Conclusion and recommendations

The researcher summarizes the study undertaken to conclude and make recommendations based on the study findings. He informs the reader about the purpose of the study, process used to collect and analyze data and the major findings of the study.

Recommendations must be consistent with the purpose of the study, its objectives, evidence presented by the data and the interpretation given.

G). References

The researcher should cite references of documents used as a way of giving credit to authors of any work or materials quoted from or referred to by listing them.

H). Appendices

It contains information that the researcher does not deem necessary to include in the body of the report. It includes items like instruments used in data collection, correspondences related to the study, letters of approval to conduct research and also a copy of research permit.

Summary

In this unit you learned that a research report is a document communicating to others, the generalization and findings of the research study. Writing of report communicates to others the findings of a study and stores knowledge and findings of the study.

To format a research report various steps are followed. They include logical analysis of the subject matter; Preparation of the final outline; Preparation of the rough draft; Rewriting and polishing of the rough draft; Preparation of bibliography; Writing the final draft.

A good layout of a research report must contain components like Title, Declaration, dedication, Acknowledgements, Abstract, Table of contents, List of tables and figures, Background of the study, the problem statement, Objectives of the research, Hypothesis or research questions, Significance of the study and Limitations of the study.

The report also includes Literature Review, Methodology, Results and discussion section (Data findings, analysis and interpretation), Summary, Conclusion and recommendations, References and Appendices.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Give the meaning of research report.

b). Outline the components of a research report.

c). Explain the contents of research that appear in the 'appendices'

Assessment

a). Highlight the significance of a research report.

b). Show the contents of research that are put in the 'Introduction section'.

c). Outline what you would include in your methodology section of the research report.

Unit 9

Research Proposal Writing

9.1 Introduction

This unit explains the meaning, components and significance of research proposal. It also shows qualities of a good research proposal. Logical and ethical issues pertinent to conducting of research are also covered in the unit.

Upon completion of this unit you will be able to:

Outcomes

- Explain the importance of a research proposal.
- Identify factors considered in selecting a research project
- Identify elements of a research proposal.
- Compile a research proposal.

Terminology

Research proposal: A research proposal is a document that sets out the purpose of the study and the research design details of the investigation to be carried out by the researcher.

Project proposal: It refers to a proposal which is not research-oriented but is action-oriented and aimed at undertaking certain activities to solve a specific problem.

9.2 Research Project Proposal

Research proposal: It is a research plan, suggestion or request. It is a request to implement a programme/study. A research proposal is a document that sets out the purpose of the study and the research design details of the investigation to be carried out by the researcher.

It's a plan of action to be followed in the study. A plan that indicates the strategy the researcher intends to use in search of answers to the main research questions/problem and specific research questions. The format can vary from one study to another study.

It is a description or plan to be followed in carrying out a proposed study. Sources of a proposal would include the past experience of the author/researcher in a particular subject or current need like academic like training and staff development, previous research projects and national policies

Other particular subjects may include strategic plans, sudden occurrences, change of behavior, internet, networking with the other researchers and experts in one's area of interest. It should clearly communicate to the reader the research problem that will be investigated.

Project proposal: It refers to a proposal which is not research-oriented but is action-oriented and aimed at undertaking certain activities to solve a specific problem. The differences between research and project proposals focus on expected outcome and the implementation process.

In a project proposal, the outcome is a certain problem being solved while in research proposal, the outcome will be data which will contribute to knowledge and forms the basis for recommendations and action.

9.2.1 Significance of research proposal

- It helps to define why research is relevant, how to collect the data, who has the information and where the information is available and how it shall be collected and analyzed.
- Researchers are able to evaluate the study by examining the difficulties which are likely to be involved and making the necessary modifications.
- Provides a guide or plan of general strategies to be undertaken.

9.2.2 Qualities of a good research proposal

A good research proposal should be;

a) **Clearly written**

Proposal should be clear in meaning since a vague proposal will discourage funding entities (donors) or may not be accepted by the advisors (in case of academic proposals).

b). **Precise**

A proposal is actually a research plan and the researcher should stick to it during the entire study.

c). **Of reasonable length**

The number of pages of the report does not really matter as long as the key components are included and adequately explained. A too wordy proposal makes it unnecessarily long and discourages readers.

d). **Worth the time and money being proposed**

Rationale and significance of the study should be carefully thought out especially with regard to the money and time that will be spent.

9.2.3 Format of a Research Proposal

A research proposal includes three man chapters starting with chapter one which is the Introduction that captures the background to the study, statement of the research problem, purpose and objectives of the study, hypothesis, conceptual/theoretical framework and chapter two is Review of Related Literature and chapter three is research methodology. References and appendices follow in Chapter Three.

The format is the general pattern of the organization and arrangements of the study. It flows as follows;

I). Title Page

Title refers to heading, label or tag and it describes what the study is about and it must be clear and specific meaning that the independent and dependent variables should be easily identified.

It should capture the specific and precise research title, Name of the student and admission No, details of institution to submit the report and partial fulfilment requirements. It gives crucial and important information at a glance.

Example of Title Page

An Investigation into the effects of internal control systems in business performance; a case study of Cooperative Bank of Kenya.

By M.M. Kimani

A research Proposal Submitted in Partial Fulfillment of the Requirement for the National diploma in **Business Management.**
August, 2009.

II. Chapter One - Introduction

1.1 Background to the Study/Problem

1.2 Statement of the problem

1.3 Aim/Purpose and Objectives of the study

1.4 Research Questions and Hypothesis

1.5 Significance of the study

1.6 Justification/Rationale of the study

1.7 Scope and limitations of the study

1.8 Conceptual framework

1.9 Definition of Terms

III. Chapter Two - Literature Review

It captures what other writers/researchers have said about the research problem under investigation.

IV. Chapter Three - Research Methodology

3.1 Research design

3.2 Target Population

3.3 Sample and sampling methods/sample selection

3.4 Data collection procedures and tools/methods

3.5 Data analysis

V). Work plan and tentative time frame

VI). Budget

VII). References/Bibliography

VIII). Appendices

Note that the proposal should have a table of contents that captures the list of items and the page numbers.

9.3 Logistical and ethical issues considered in research

9.3.1. Logistical Issues

This involves all those processes, activities or actions that a researcher must address or carry out to ensure successful completion of a research project. Logistical issues are divided into three categories namely;

9.3.1.1 Pre-field work logistics

They include;
- Terms of reference
- Obtaining a research permit.
- Establishing a work plan.
- Training research assistants or enumerators.
- Pre-testing the instrument e.g. questionnaire or interview schedule
- Sampling
- Distributing the instrument.

9.3.1.2 Fieldwork Logistics

They include;
- The researcher should ensure all mechanisms of data collection are efficient.
- He should also familiarize himself with the geographical area where research is undertaken.
- He should create rapport with respondents.
- He should take precautions against common disease e.g. malaria, typhoid etc.
- Researchers and enumerators should be courteous to avoid annoying the respondents.
- Researcher should not be over-inquisitive.
- Enumerators and research assistants should be familiar with instruments of data collection so that they do not appear confused.

9.3.1.3 Post-field work logistics

It includes the process of getting the completed instruments from the field to the office where data coding and analysis will be done. During data collection, the researcher must establish an efficient system of collecting and analyzing data.

9.3.2. Ethical issues related to research

Ethics means field of philosophy dealing with one's conduct and serves as a guide to one's behaviour.

Some of the ethical issues that researchers must consider in their research study include;

a) Avoid research plagiarism and fraud. Plagiarism is a situation where a researcher refers to another person's work as theirs without acknowledging the author.

b) Researcher should not misuse his privileges owing to his training, expertise, legal authority etc.

c) Confidentiality and privacy- Respondents should be protected by keeping the information confidential.

d) Anonymity- Researcher can disclose information about particular individual but protect the identity and privacy of the individual.

e) Physical and psychological harm- Researcher should avoid embarrassing questions, or expressing shock or disgust while collecting data.

f) Voluntary and informed consent- Respondents must be told the truth and given facts about the research in order to make an informed decision about participating or not.

Summary

In this unit, you learned about research proposal and its components. A research proposal has been defined as A research proposal is a document that sets out the purpose of the study and the research design details of the investigation to be carried out by the researcher.

A research proposal consists of three chapters namely Chapter One – Introduction, Chapter Two - Literature Review and Chapter Three - Research Methodology, Work plan and tentative time frame, Budget, References/Bibliography and Appendices.

A good research proposal should be clearly written, precise, of reasonable length and worth the time and money being proposed.

This unit has also exposed you to both logistical and ethical considerations adhered to in conducting research. Logistical considerations involve all those processes, activities or actions that a researcher must address or carry out to ensure successful completion of a research project. They are classified into pre-fieldwork, fieldwork and post-fieldwork logistics.

Research is conducted based on ethics. There are ethical issues that a researcher should adhere to. They include avoiding plagiarism, confidentiality and privacy and avoiding physical and psychological harm to the respondents.

Assignment

Having read the above unit, attempt the following questions to test your understanding of the unit.

a). Define the term research proposal.

b). Discuss the components of a research proposal.

c). Explain the role of research proposal in research.

Assessment

a). Examine the ethical issues that you would put in place in a research study.

b). Identify the characteristics of a good research proposal.

c). Distinguish between research proposal and project proposal.

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