

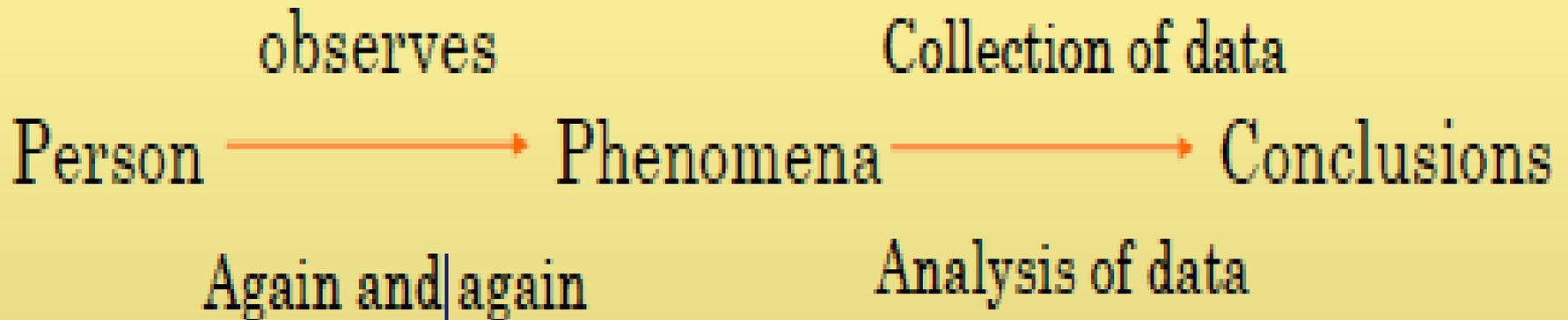
Chapter One

Research Methods

1. Research Methods

Concepts and Definition of Research

- The term 'Research' consists of two words:
- Research = Re + Search
- 'Re' means again and again and
- 'Search' means to find out something, the following is the process:



What is Research??

- Therefore, research means to observe the phenomena again and again from different dimensions.
- The research is a process of which a person observes the phenomena again and again and collects the data and on the basis of data he/she draws some conclusions.

When we do a research???

➤ Research is what we do when we have a question or a problem we want to resolve

General Characteristics of Research

- It gathers **new knowledge** or data from primary or first-hand sources.
- It is an exact systematic and accurate investigation.
- It uses certain valid data gathering devices.
- It is logical and objective.
- The researcher **resists the temptation** to seek only the data that support his hypotheses.
- The researcher eliminates personal feelings and preferences.

- It achieve something to organize data in quantitative terms.
- Research is patient and unhurried activity (moving. Acting or taking place without haste or urgency).
- The researcher is willing to follow his/her procedures to the conclusions that may be unpopular and bring social disapproval.
- Research is carefully recorded and reported.
- Conclusions and generalizations are arrived at carefully and cautiously.

□ THE FUNCTIONS OF RESEARCH

- The function of research is to aid to making a decision concerning the refinement or extension of knowledge in the particular area.
- to improve research procedures through the refinement and extension of knowledge.

The research has three objectives:

1. *Theoretical objective*: those researches whose objectives are theoretical formulate the new theories, principles or laws.

Physics, Chemistry, Mathematics

2. *Factual objective*: those researches whose objective is factual find out new facts.

Such type of research is done in history.

3. *Application objective*: application objective does not contribute a new knowledge in the fund of human knowledge but suggests new applications.

KINDS OF RESEARCH

There are various bases to classify the research.

1. Based on Goal of the Research: the nature of problem to be Solved.

I. Fundamental / Basic / theoretical research: mainly concerned with generalization and formulation of theory.

II. Action / Applied / practical research : *Applied research* aims at finding a solution for an immediate problem facing a society or an industrial/business organization.

2. Based on Specific Objectives of the Research:

□ **Descriptive:** Describe and interpret some aspect of a phenomena; undertaken to provide answers to questions of who, what, where, when, and how
- but not why.

□ **Explanatory:** Establish cause and effect relationship between variables; the desire to know "why," Builds on both exploratory and descriptive researches, Explaining things (not just reporting).

□ **Exploratory:** Gaining background information and understanding of a problem

3. Based on Approaches of the Research: Qualitative and Quantitative

☐ Qualitative Research:

- ✓ No attempt to quantify results through statistical analysis.
- ✓ Describes behavioral aspects and other factors studied in the social sciences and humanities.

☐ Quantitative Research:

- ✓ Develop and employ mathematical models, theories and hypotheses pertaining to natural phenomena
- ✓ Involves collecting and analyzing numerical data and applying statistical tests.
- ✓ Based on measurements; produce numbers

4. Based on Designs of the Research: Experimental and Non experimental

❑ **Experimental:**

- Can be conducted in laboratory
- Usually done to establish r/ship b/n dependent and independent variables.
- Usually involves modeling in terms of experimental group and control group

❑ **Non-Experimental:**

- Survey: Through self administered questionnaires
- Desk study: Extracting the facts from documents

5. Based on Source of Data: Primary and secondary data

❑ **Primary Data:** Data collected from participants through methods such as telephone, mail, online, and face-to-face and observation studies. Such data does not already exist.

❑ **Secondary Data:** Accessing data through sources such as the internet and library. The summary, collection and synthesis of existing research.

Research Types

Goals

Objectives

Approach

Design

Data

Applied

Descriptive

Quantitative

Experimental

Primary

Basic

Explanatory

Qualitative

**Non
experimental**

Secondary

Exploratory

□ THE RESEARCH PROCESS

For a research journey there are two important decisions to make-

- I. What you want to find out about or what research questions (problems) you want to find answers to;
- II. How to go about finding their answers.

The path to finding answers to your research questions constitutes

research methodology

STEPS IN RESEARCH PROCESS:

□ Research process consists of series of actions or steps necessary to effectively carry out research and the desired sequencing of these steps.

There are practical steps through which you must pass in your research journey in order to find answers to your research questions.

1. Formulating the Research Problem
2. Extensive Literature Review
3. Developing the objectives
4. Preparing the Research Design including Sample Design
5. Collecting the Data
6. Analysis of Data
7. Generalization and Interpretation
8. Preparation of the Report

Step1. Formulating the Research Problem:

- Main function is to decide *what* you want to find out *about*.

Sources of research problems

- Research revolves around four Ps:
 - People- a group of individuals
 - Problems- examine the existence of certain issues or problems relating to their lives;
 - Programs- to evaluate the effectiveness of an intervention
 - Phenomena- to establish the existence of a regularity.

CONSIDERATIONS IN SELECTING A RESEARCH PROBLEM:

- ✓ Interest:
- ✓ Magnitude:
- ✓ Measurement of concepts:
- ✓ Level of expertise:
- ✓ Relevance:
- ✓ Availability of data:
- ✓ Ethical issues:

Every research study has two aspects:

1. Study population-

People:

2. Subject area- Problems: issues, situations, associations, needs, profiles

Program :

Phenomenon:

Techniques involved in Defining Problem

I. Statement of the problem

II. Understanding the nature of problem

III. Surveying the available literature

IV. Developing the idea through discussion

V. Rephrasing the research problem

- In Ethiopia, morbidity reports and community-based studies have shown that diarrheal disease is a **major public health problem** that causes excess morbidity and mortality in children (CSA, 2000).
- The diarrhea attributed mortality rate is **about 10 per 1000 under-five** populations (Mekasha et al., 1995). Studies conducted in central rural Ethiopia revealed that diarrhea is one of the common causes of under-five mortality, accounting about 8.4 to 27% of all deaths (Shamebo et al., 1994).
- In line with the above reality, the research/study attempted to come up with possible solution and recommendation after having clear understanding upon the situation by giving due emphasis to answer the following research questions.
 - *What is the Prevalence of diarrhea among children under the age five in study area?*
 - *Are socio-economic, demographic, environmental, and health/nutrition proximate characteristics related to experiencing of diarrhea in under _ five children?*

Step 2. Reviewing the Literature:

The phrase “review of literature” consists of **two** words: Review and Literature.

- **Literature:** refers to the knowledge of a particular area of investigation of any discipline which includes theoretical, practical and its research studies.
- **Review:** means to organize the knowledge of the specific area of research to evolve a structure of knowledge to show that his/her study would be an addition to this field.

REVIEW OF LITERATURE

- ❖ Literature review is integral part of entire research process and makes valuable contribution to every operational step.

- ❖ Reviewing literature can be time-consuming, daunting and frustrating, but is also rewarding. Its functions are:
 - I. Bring clarity and focus to your research problem;

 - II. Improve your methodology;

 - III. Broaden your knowledge;

 - IV. Contextualize your findings

NEED OF REVIEW OF LITERATURE

1. To be up-to date in his information about the literature, related to his own problem already done by others.
2. The review of literature indicates the clear picture of the problem to be solved.
3. It avoids the replication of the study of findings to take an advantage from similar or related literature
4. It provides as source of problem of study, an analogy may be drawn for identifying and selecting his own problem of research.
5. It provides the rationale for the study.

SOURCES OF REVIEW OF LITERATURE

✓ There are various sources of literature which may be used for this purpose. These sources can be broadly classified into these heads.

1. Books and Text books Material
2. Encyclopedias
3. Handbooks, Yearbooks and Guides
4. Specialized Dictionaries
5. Newspaper

Use the following website

Address: www.hinary.org

User name: Eth003

Password: 452SSS66

- THERE ARE TWO TYPES OF LITERATURE REVIEW

- ❖ Theoretical Literature

Height-for-age (H/A): is a longer-term index and represents linear growth of a child. It gives information about chronic malnutrition or stunting which reflects the accumulation of past outcomes (Cogill, 2001).

- ❖ Empirical Literature

A study done in Banten Province Indonesia using binary logistic regression, children age had statistically significant association with diarrhea occurrence. Older children were 0.98 less likely had chance of having diarrhea than younger children (p-value=0.001) (Rohmawati, 2010)

References Citation

1. Vancouver System:

- Consecutive numbers are used in the text to indicate the references.
- Then at the end of the paper or chapter (of a book) the references will be listed in that order, using the format described below:

A. For an article:

- Author(s) Surname followed by Initials. Title of article. Name of Journal. Year; Volume (number): page numbers of article.

Example: Alex E. Effects of heat on polymer based devices. International Journal of Polymer Engineering. 2003; 1(2): 59-62.

B. For a book:

Author(s) Surname followed by initials. Title of book. Edition.

Place: Publisher; Year.

Example:

Todd J and Lauria DB. Metallurgy Engineering. 4th ed. Rostock. Churchill Livingstone; 1998.

C. For a chapter in a book:

Author(s) of the chapter Surname(s) followed by initials. Chapter title. In: Editor(s) of book Surname(s) followed by initials, eds. Title of book. Place: Publisher, Year; Page numbers of chapter.

Example:

Briggs C, Flick U and Stringer ET. Ceramic-based construction materials. In: Boerma T and Bennett J (eds). Material Sciences Engineering. Amsterdam: KIT Press, 1999; p. 51-68.

2. Harvard System:

✓ References are referred more fully in the text, putting the surname of the author and year of publication referred to between brackets,

e.g., (Tatek, 2010).

✓ In this system of citation, the references at the end of the proposal should be listed in alphabetical order and publication year comes following authors name in brackets.

Example-For a book:

➤ Todd J and Lauria DB (1998). Metallurgy Engineering. 4th ed. Rostock. Churchill Livingstone.

Step 3 The Formulation of Objectives:

- Objectives are the goals you set out to attain in your study.
- They inform a reader what you want to attain through the study.
- It is extremely important to word them clearly and specifically.

Objectives should be listed under two headings:

- a) Main objectives (aims); is an overall statement of the thrust of your study.
- b) Sub-objectives:- are the specific aspects of the topic that you want to investigate within the main framework of your study.

They should be numerically listed.

- Each objective should contain only one aspect of the Study.
- Use *action oriented words* or verbs when writing objectives.
- The objectives should start with words such as
 - ‘to determine’,
 - ‘to find out’,
 - ‘to ascertain’,
 - ‘to measure’,
 - ‘to explore’ etc.

CHARACTERISTICS OF OBJECTIVES

Clear + Complete + Specific + Identify main variables to be correlated + Identify the direction of relationship

Objective of the Study

General objective

To assess the determinant factors which are significantly associated with the occurrence of diarrhea morbidity among under-five children in Sheka zone, South West Ethiopia.

Specific objectives

- To Assess prevalence of diarrhea among children under the age five in Sheka zone, South West Ethiopia
- To assess potential factors those are related to diarrheal morbidity of children under the age of five in Sheka zone, South West Ethiopia.
- Provide necessary recommendations for policy makers and other stake holders.

Step 4. Preparing the Research Design

- ❖ *Research design* is the conceptual structure within which research would be conducted.
- ❖ The function of research design is to provide for the collection of relevant information with minimal expenditure of effort, time and money.
- ❖ The preparation of research design, involves the consideration of the following :
 1. Objectives of the research study.
 2. Method of Data Collection to be adopted
 3. Source of information—Sample Design
 4. Tool for Data collection
 5. Data Analysis-- qualitative and quantitative

TOOL FOR (RESEARCH INSTRUMENTS)

❖ The research tool provides the input into a study and therefore the quality and validity of the output are solely dependent on it.

Guidelines to Construct a Research Tool:

Step I: Clearly define and individually list all the specific objectives or research Questions for your study.

Step II: For each objective or research questions, list all the associated questions that you want to answer through your study.

Step III: Take each research question listed in step II and list the information required to answer it.

Step IV: Formulate question(s) to obtain this information.

STEP 5: COLLECTING DATA :

- Having formulated the research problem,, developed a study design, constructed a research instrument and selected a sample, you then collect the data from which you will draw inferences and conclusions for your study.
- Depending upon your plans, you might commence interviews, mail out a questionnaire, conduct experiments and/or make observations.
- Collecting data through any of the methods may involve some ethical issues in relation to the participants and the researcher :

Ethical Issues Concerning Research Participants:

Collecting information:

○ Your request for information may put pressure or create anxiety on a respondent. Is it ethical?

Seeking consent:

○ In every discipline it is considered unethical to collect information without the knowledge of the participant, and their expressed willingness and informed consent.

Providing incentives:

○ Most people do not participate in a study because of incentives, but they realize the importance of the study.

Seeking sensitive information:

○ Certain types of information can be regarded as sensitive or confidential by some people and thus an invasion to their privacy, asking for such information may upset or embarrass a respondent.

The possibility of causing harm to participant:

❖ Harm includes, research that might include hazardous experiments, discomfort, anxiety, harassment, invasion of privacy, or demeaning or dehumanizing procedures.

Maintaining confidentiality:

❖ Sharing information about a respondent with others for purposes other than research is unethical.

II. ETHICAL ISSUES RELATING TO THE RESEARCHER:

Avoiding bias:

- ❖ Bias is a deliberate attempt to either to hide what you have found in your study, or highlight something disproportionately to its true existence.

Provision or deprivation of a treatment:

- ❖ Is it ethical to provide a study population with an intervention/ treatment that has not yet been conclusively proven effective or beneficial?

Using inappropriate research methodology:

Incorrect reporting:

Inappropriate use of the information:

STEP 6: PROCESSING AND ANALYSING DATA

□ Processing and analyzing data involves a number of closely related operations which are performed with the purpose of summarizing the collected data and organizing these in a manner that they answer the research questions (objectives).

The Data Processing *operations* are:

- *Editing*- a process of examining the collected raw data to detect errors and omissions and to correct these when possible.
- *Classification*- a process of arranging data in groups or classes on the basis of common characteristics.
- *Tabulation*-Tabulation is the process of summarizing raw data and displaying the same in compact form for further analysis.

STEP7: REPORTING THE FINDINGS:.

□ Writing the report is the last, and for many, the most difficult step of the research process.

The report informs the world what you have done, what you have discovered and what conclusions you have drawn from your findings.

□ The report should be written in an academic style. Language should be formal and not journalistic

Step8: WRITTEN RESEARCH PROJECT REPORT FORMAT

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

Title Page

-Title of the Research Project,

-Name of the researcher,

-Purpose of the research project, e.g. —*A research project submitted in partial fulfillment of _____*

-Date of Publication

Acknowledgements

Here the researcher may acknowledge Institute Principal, Faculty Guide-both research guide and technical guide, research participants, friends etc.

Table of Contents

In this section is listed the contents of the report, either in chapters or in subheadings

List of Tables

This section includes title and page number of all tables.

List Of Figures

This section contains title and page number of all graphs, pie charts

Introduction

This section introduces the research setting out aims and objectives. It includes a rationale for the research

□ *Theoretical Framework and Review of Literature*

In this section is included all your background research which may be obtained from the literature review.

□ *Research design:*

This section includes all practical details followed for research . After reading this, any interested party should be able to replicate the research study.

The methods used for data collection, how many people took part, how they were chosen, what tool was used for data collection, how the data was analyzed etc.

□ *Data Analysis and Interpretation:*

If you have conducted a large quantitative survey, this section may contain tables, graphs, pie charts and associated statistics.

□ *Summary and Conclusion:*

In this section you sum up your findings and draw conclusions from them, perhaps in relation to other research or literature.

□ *Recommendations*

which have been developed from the research is included- sometimes this section is included at the beginning of the report.

□ *Suggestion for Further Research*

It is useful in both academic reports and work-related reports to include a section which shows how the research can be continued.

□ List of References /Bibliography

-List of references contains details only of those works cited in the text.

-A bibliography includes sources not cited in the text but which are relevant to the subject.

For Books

-Authors surname (alphabetically),

-Date of publication

-Title of book in italics

-Place of publication, Publisher. e.g.

Philip, T.E.; 1986, *Modern Cookery for Teaching and Trade*, Mumbai, Orient Longman.

Appendices:

EXERCISES

1. Define the term Review of literature, how is it different from traditional meaning? Enumerate the objectives and significance of review of literature.
2. Explain the need and functions of review of literature.
3. Describe principles and procedures of review of literature and precautions in consulting library material.
4. Is it ethical to provide incentives to respondents to share information with you because they are giving their time?