

Hand Out

Chapter: Writing a Research Proposal

1.1 Introduction

A research proposal is a document which accounts for the research topic chosen by a researcher. It is a written document which totally describes the investigator's plan of action and research design. Generally, it is a brief and rigorous description of what the researcher is going to conduct in his due course of action.

The following are the main questions which must be born in mind whenever an investigator becomes interested in drafting a research proposal document.

- Is my proposed research interesting, important and relevant?
- Who have/has already conducted research in the area?
- What are my aims, objectives, research questions or hypotheses?
- How do I intend to conduct the research?
- Where do I intend to do the research?
- What is my time table for the research to be conducted?
- What do I expect the outcome to be?

If these questions are answered in your research proposal document, your research would be good and smooth. Therefore, a critical thinking and time devotion should be employed whenever a researcher wants to develop a research proposal because every problem in the proposal project is also a problem of the actual research activities.

1.2 Content of the Research Proposal

Even though different scholars believed that there is a variation in the content and format of a research proposal, the following list of proposal contents is somewhat agreeable one.

1. *Proposal Abstract*
2. *Problem Identification and Definition*
3. *Justification or Significance of The Study*
4. *Conceptual Framework and Definition*
5. *Research Goal and Objectives*
6. *Research Questions and Hypothesis*
7. *Study Design*
8. *Analysis Plan*
9. *Plan for Interpretation*
10. *Review of Literature*
11. *Plan for Reporting Your Findings*
12. *Time Table or Work Schedule*
13. *Logistics and Budget Breakdown*
14. *Bibliography and References*
15. *Appendix*

1.2.1 Proposal Abstract

Proposal abstract is a summary of the proposed study. It usually appears at the first page of the document. However, it is always written after all other sections of the proposal have been completed, because it is totally concerned about what the researcher has written in the proposal document.

The abstract of the research proposal should be brief and clear, usually not more than a page or half. Therefore, it is always advisable for the abstract of the research proposal to be short and self-explanatory. It should include:

- ✚ the type of research study,
- ✚ the problem (to be studied),
- ✚ the objectives of the research,
- ✚ methodology (to be used), and
- ✚ expected findings and their dissemination.

1.2.2 Problem Identification and Definition

It is a sundry fact that any research is targeted toward some social problems. It has the purpose of addressing a problem. In other words, there is no need of conducting a research activities if there is no a problem to be addressed. Therefore, conducting an investigation with the absence of some problems is like an attempt to drink water from an empty-glass.

As you have been introduced from the previous semester course (socy 221), a problem identification means choosing a topic or defining the general interest area of the study. Once the overall interest area of the research has been identified, you have to delimit the scope of your study.

Your problem definition should keep the following points:

- A. the discrepancy between what is and what should be, for example,
 - 30% of unemployment ----- what is?
 - All should be employed-----what should be.
- B. the magnitude or incidence of the problem, for example,
 - only 30% of Ethiopian labour force is employed.
- C. population affected by the problem:
 - who are *directly* or *indirectly* affected by the problem?
- D. previous attempts to address the issue:
 - What methods were used? What are the results or conclusions?
 - What are the shortcomings of the previous attempts?
 - What questions are not answered? Etc.

Don't forget that you are elaborating the problems of the study based on the variables and their relationships.

1.2.3 Justification

Justification is the rationale of conducting a research project on the defined problem. This is a section of research proposal document where the researcher should justify that his research topic is very important, timely and critical based on some convincing explanations.

A research is costly. It needs large amount of physical and human resources. The researcher spends much of his time and effort. Therefore, any investigator should do something valuable which, in turn, convinces concerned bodies or stakeholders of the research.

Under this subtopic, the researcher is looked forward to answer different questions like:

- ✓ How important is the problem?
- ✓ Is it worth doing a research?
- ✓ What is the relevance of the study?

- ✓ To what or which policy and program of the country does the research use and so forth.

In general, justification is an instrument by which an investigator attempts to convince supervisors, or sponsors to approve his or her research proposal. Basically, you have to persuade people that you know what you are talking about and that a research is important.

This rational or justification should be placed within the context of the existing research or within your own experience and/or observation. If there is other work which has been conducted on the area, you need to show how your work will built on and add to the existing knowledge.

Subsequently, an investigator should consider points that are listed below so long as he/she is working with justification.

- ✚ Is the problem currently/timely?
- ✚ Does the problem have serious consequences?
- ✚ Does it potentially affect large number of people?
- ✚ Does the issue have economic, social and political implications?
- ✚ Whose concern is it?
- ✚ Is it discussed already?

1.2.4 Research Objectives

Objective refers to something which is going to be achieved once some stages of a certain action have been accomplished. They are the expectations of the research to which the project it set to accomplish.

A research objective is classified into two: *general* and *specific* objectives. General objective of a study refers to the ultimate goal of the investigation which is to be achieved at the end of the research project or at the end of the accomplishment of the specific objectives. It is the outcome of the study. Therefore, the general objective of a research is the main issue that is looked at/for (e.g. *to identify, describe, and produce an analysis of the interacting factors which influence the learning choice of adult re-turners and to develop associated theory*).

Specific objectives, on the other hand, are the means by which the researcher intends to achieve the general objective of the research. They are activities to be taken step-by-step. They must be clear and succinct. They include what will be done in the course of the research process, and the achievement of which is the best reason for the general objective to be attained. In other words, specific objectives are specific issues that are looked at/for. They must be measurable, either qualitatively or quantitatively, and form a guide to the research methodology, data analysis, and presentation of the result. Even the establishment or formulation of research questions or hypothesis depends on specific objectives, particularly. Some examples of specific objectives of a research are:

- To evaluate some issues
- To explains some issues
- To assess some problems

- To explore some issues
- To describe some events
- To test some hypotheses
- To see the relationship between some variables . . . , etc.

1.2.5 Research Questions/Hypotheses

The objectives of some study need to have research hypotheses that are going to be tested, while others researches want to answer several research questions developed by the researcher. A research question is to be answered whereas a hypothesis is going to be proved or disproved. A question requires information like how much? What? Where? Which? etc., while a hypothesis is a tentative solution for the problem proposed by the researcher at the very beginning of the study. It is designed to make predictions about the relationship between dependent and independent variables, and about the extent of something.

It should, however, be emphasized that in no way a hypothesis statement can claim to be the only solution for the problem. It serves only as a point of departure- it is the chain between the theory and the research that leads to the broadening of knowledge.

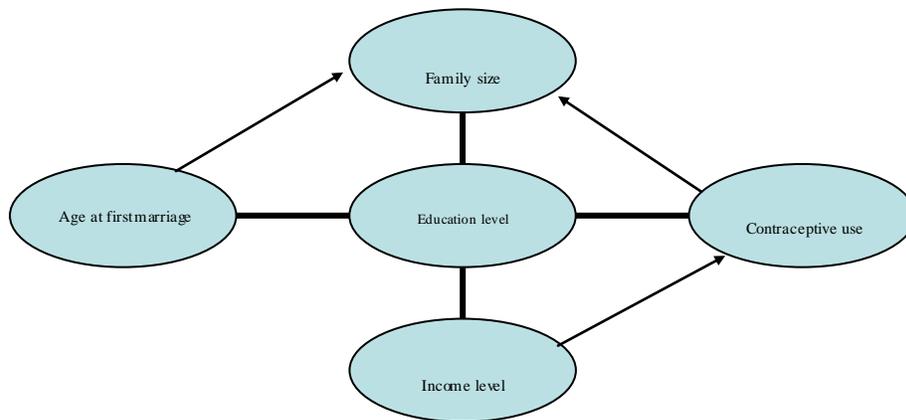
In formulating a research hypothesis, please keep yourself aware of the following criteria:

- + Stand a test;
- + Be expressed in clear language;
- + Be in accordance with them general theme of other hypotheses statements in the same field of study, and should be regarded as valid;
- + Be coordinated with the theory of science;
- + Be a tentative answer for the formulated problem;
- + Be logical and simplistic;
- + Consider available research techniques (to be able to analyse and interpret the results);
- + Be specific; and
- + Be relevant to the collection of empirical phenomenon, and not merely conclude value judgement. For example,
 - Education of girls' appears to increase their contraceptive use and thus reduces the fertility level.
 - Poor houses are likely to have large family size.
 - Numbers of children may be lower as education level increases

1.2.6 Conceptual Framework and Definitions

Conceptual framework is an anticipated cause-and-effect relationship between conceptual variables. The relationship can be either simple or complex depending on the number of variables involved and the type of relationship they do have. The relationship can be either written using words or presented using graphs. Some examples of a conceptual relationship are given below:

X is a cause for Y.



Conceptual framework deals with the interrelationship among different variables involving in the study, excluding extraneous variables.

Definitions are concerned with the meaning or explanation of concepts involving in the research. There are two types of definitions in research - *conceptual* and *operational* definitions. A conceptual definition is a synonymous with dictionary definition, while an operational definition is one's own definition that is going to be employed when the dictionary meaning is wide and vague. Operational definition specifies precise definition to be followed in measuring variables. For example, lack of income is the dictionary meaning of *poverty* but *income less than Birr 200 per month* may remain operational definition of poverty proposed by a researcher.

1.2.7 Study Design/Methodology

Study design is a plan of action. It is an arrangement of methods and tools that will be employed for data collection and analysis as well as for sample selection. Its primary intention is to combine the purposes of the research with the available resources. Therefore, our research design is very much influenced by the objectives and available resources of the study.

Our study design of the research proposal includes:

- ✚ Types of research method
- ✚ Description of units of analysis,
- ✚ Coverage, scope, population, study place, etc.
- ✚ Sample size,
- ✚ Time reference- study period (longitudinal or cross sectional).
- ✚ Description of data collection procedures,
 - ✓ What information is going to be looked for?

- ✓ How this is going to be done?
- ✓ Who is going to do each of the aspects of the data collection?
- ✓ Techniques for data quality control.

Description of units of analysis refers to the statement of what or who is going to be studied and how you are going to study. A variable changes from one unit of analysis to the other. But, some variables may not change across units of analysis. These are called *constants* (not variables). E.g.

Unit of analysis	Age	GPA	Marital status	Religion
1	20	4.00	single	Orthodox
2	19	3.50	single	Muslim
3	23	3.00	single	Orthodox
4	30	2.60	single	Catholic

Here, marital status is not a variable rather it is a constant as it doesn't change across units of analysis.

Coverage refers to the target population for whom generalization is going to be made. It also refers to the extent, issues and concepts to be dealt with. This is all about explaining of the concern of the study. 'Where the study is going to be conducted?' is also included under this topic.

The type of the study or research method refers to the tools and instrument which are going to be employed in the study process. It may be survey, FGD, case study, and so forth.

Time reference is dealt with the duration of the study period. The entire period of the study including preparation of the proposal, submission and approval, training (where necessary), presenting (of the questionnaire), data collection, data analysis, report preparation, and dissemination of findings. When the study is concerned with a point of time, it is a cross-sectional study; and when the study is concerned with trend, cohort, or panel analysis, it is a longitudinal study.

A *sample size* refers to the number of individual persons or organizations included in a selected sample (you will have further discussion about this in chapter three). Therefore, the details in the sample size and how it is worked out; its justification; and the selection (inclusion/exclusion) criteria should be described in detail.

A researcher is also expected to explain data collection procedures and instrument, the confidentiality of the data, and data quality control mechanisms. There are several procedures to be used for the purpose of data quality controlling. Some of them include:

- ✚ Post enumeration- reinterviewing,
- ✚ Pre-testing,
- ✚ Data collector and supervisor training,
- ✚ Use of multiple sources,
- ✚ Use of cross-check questions.

1.2.8 Analysis Plan

A research question or hypothesis is not formulated for the sake of formality but it must be answered or tested in the process of the research. And this can only be done after the collected data has been analysed. Thus, the main purpose of data analysis is to answer a research question or to test a research hypothesis. When methods and instrument of data collection are decided, the investigator has also to think of data analysis. Data analysis and data collection should not be viewed separately. Therefore, the type of data analysis depends on the data collected. For example, statistical analysis needs large sample size and qualitative analysis needs a small sample size. Similarly, descriptive analysis needs descriptive statistics only whereas explanatory analysis needs inferential statistics.

In your data analysis, you have to discuss data preparation and data analysis procedures. Data analysis involves at least the following three steps:

- Variable transformation,
- Descriptive statistics, and
- Inferential statistics.

Variable transformation refers to creating new variables and categories in place of the existing variables. For example in a questionnaire you may ask “what is your marital status?” the option includes single, married, divorced, and widowed. Here, the researcher can transform these five variables into two. Single can be transformed into never-married and the rest for into ever-married. Four further explanation refer the following three examples.

1. If the age status of respondents found to be 15, 16, 17, . . . , 78, the researcher may transform these data into **young** (15-30), **adult** (30-60) and **old** (60-78).
2. In a given research, students’ academic status found to be 1.80, 2.00, 2.20, 2.60, . . . , 4.00. And the investigator transforms these variables into **warning** (1.80), **promoted** (2.00-3.00), **distinction** (3.00-3.50), **great distinction** (3.50-3.75), and **very great distinction** (2.75-4.00).
3. from one study conducted on the social status of persons, the following results were found: no house, income < 200, no education, small houses, income 201-800, secondary education, villa house, income >800, and tertiary education. The researcher have transformed no house, income < 200, and no education into **lower-class**, small houses, income 201-800 and secondary education into middle class, and villa house, income >800, and tertiary education into **upper-class**.

Descriptive statistics used to describe data quantitatively. It includes such analysis as *univariate, bivariate, multivariate*. *Univariate analysis* refers to the examination of only one variable at a time. In other words, a variable will be presented by a single questionnaire item. The most basic format for presenting univariate data would be the reporting of all individual responses. For example, if survey respondents were asked to report their ages, the researcher might report all the answers provided: 18, 35, 16, 45, 35, 53, and so forth. Such type of a report would provide a reader with the fullest details of the data collected, but it would be too cumbersome for most purposes. We use univariate

analysis if there is no relationship among variables. Bivariate analysis, on the other hand, is the analysis of two variables at a time. Refer the following example.

	Men	women
Approve	90%	48%
Disapprove	10%	52%
	100%	100%
	(400)	(400)
No answer	(12)	(5)

We use bivariate analysis when there is a relationship between two variables. But, if the relationship is among three or above variables we should use a multivariate analysis. Often numerous variables are directly associated with the dependent variable. Population change, for example, is examined by four variables: birth rate, death rate, immigration rate, emigration rate. The following is an example of a multivariate analysis.

	Men		women	
	Under 30	30 and over	Under 30	30 and over
Approve	90%	60%	78%	48%
Disapprove	10%	40%	22%	52%
	100%	100%	100%	100%
	(200)	(200)	(200)	(200)
No answer	(2)	(3)	(10)	(2)

Inferential statistics is used to make conclusions about the population on the basis of the value of the statistic which is evidence about the population found from the sample. There are two types of statistical inference: *statistical estimation* and *hypothesis testing*. You will have better insights about statistical inference under the course Social Statistics (socy 362).

1.2.9 Review of Literature

Most current literature should be presented in a concise summary form. Nowadays, most current researchers are in line with the idea that majority of the literatures should be in the past five years at most. This helps you to explain that you have knowledge of the literature surrounding your topic. If you are unable to find any other research that deals specifically with your proposal project, illustrate how your proposed project will fill this gap.

Note that in most research proposals, literature review is presented as background of the problem that is presented before Problem Identification.

Generally literature review of a research proposal is focused on the following points:

- a) Identifying critical areas for the research, indicating the areas and issues where no research has been conducted as well as the shortcoming of previous researches in the area.
- b) Indicating major findings of previous study location in time, and study design in place. Identify the result obtained in previous research.

- c) Commenting on the validity and reliability of the previous investigation/s.

1.2.10 Plan for Interpretation

Your discussion of the research design, analysis plan and literature review will provide a guideline for interpreting your data. In your plan for interpretation, you have to discuss generalizability, limitations and potential contribution of the study.

You, as a researcher, are expected to indicate the target population in time and in place to which the findings of the study can be generalized. Therefore, generalizability is dealt with specifying the target population of the study. Limitations or shortcomings of your research should also be clearly stated. What problems you may face in your investigation and what data are lacking to make your generalization complete must be obviously presented. You also have to think whether the readers accept your generalization as it is or with what cautions/cares.

The investigator must also be aware of the potential contribution of the research. He/she should answer the questions “what will be the importance of your research results and who will be benefited from the research?”

1.2.11 Plan to Report Your Results

Here, a researcher will have the following activities:

- + Identify the type of report you are going to prepared.
 - ✓ Interim report (phase-by-phase),
 - ✓ Final report (at the end of the research),
 - ✓ Publication: book, journal article, newspaper, etc.,
- + Identify the way how to present you research report.
 - ✓ At seminars, workshops, conferences, etc.,
 - ✓ Submit to policy makers, decision makers, etc.,
 - ✓ Submit to instructors (in the case of senior essay).
- + Identify the way how to disseminate your report.
 - ✓ Publicizing on journals, newspaper, mass media, etc.,
 - ✓ Delivering it to the library.
 - ✓ Sending it to different beneficiaries.

1.2.12 Logistics and Budget

Under this sub-topic of a research proposal, the researcher should indicate the necessary logistics and their anticipated cost breakdown. The necessary logistics may include all the requirements of the research project, such as,

- Personnel and their individual roles,
- Training (of whom, why, when, where, how, by who, etc.),
- Paper for questionnaire, reports, etc.,
- Transport- what form and for what,
- Space (office)- how will be obtained, where, when, etc.,
- Communication facilities (for what, how, where),
- Computers, printers, photocopy facilities, etc.,
- Secretary supplies- how many, for how long, etc.,

- Library facilities- where, when, etc., and so forth.

Cost breakdown

The researcher should indicate the sources of the funds available for the study; articulate how this fund will be allocated; and indicate the necessary logistics. Each item in every line should be quantified in terms of money. The research should also indicate the amount of fund to be asked for and what the institution/s under which the research project will be conducted, will contribute.

Your cost breakdown includes components such as,

1. **Personnel** (salary and per diem):
 - + project coordinator,
 - + researchers,
 - + consultant,
 - + field supervisor,
 - + interviewers (enumerators),
 - + clerical staff (supporting staff), and
 - + others.
2. **Supplies and equipment**:
 - + office rent,
 - + telephone cost,
 - + mailing cost, and
 - + costs for computer, photocopy, etc.
3. **Transportation costs**:
 - + vehicles (pack animal transportations),
 - + fuel, and
 - + lodging .
4. **Miscellaneous costs**- unmentioned costs.
5. **Contingency**- cost fluctuation (always 5%-10% of the total cost).

You must indicate how you arrived at the amount of money being asked for, and how it is going to be disbursed.

1.2.13 Time Table/Work Schedule

The amount of time each step takes should be indicated and you should be committed to accomplish the work in accordance with the time you have allocated. However, research, almost always, takes longer time than you have anticipated. Allow for this and add extra weeks onto each section of your time table. If you finish earlier than your anticipation, that is fine as you have more time to spend on your report. But, finishing late creates problems, especially if you have to meet the deadline.

Your time table should consists of the time for :

- Sample selection.
- Questionnaire drafting ,
- Supervisor training

- Data collector training,
- Pre-testing the questionnaire,
- Revising the questionnaire after the pre-test,
- Printing the questionnaire,
- Data collection,
- Editing and codifying the data collected,
- Tabulating the data,
- Data analysis,
- Writing the final report, and presenting the result.

1.2.14 Reference and Bibliography

At the end of your research proposal document, you should list all the sources you have used in an alphabetical order. For a further explanation, please refer your previous *socy 221*, chapter five.

1.2.15 Appendix

The appendix part of your proposal document includes:

- Data collection instruments,
- List of individuals or organizations who will contribute to the study,
- Contract agreement (if the research is a contract based),
- Other information related with the study.

1.3. What Makes a Good Proposal?

- Relevance, either to the work of the funding body or to the researcher's course;
- The research is unique, or of new insights or developments;
- The title, aim and objectives are all clear or succinct;
- Comprehensive and through background research and literature review has been undertaken;
- There is a good match between the issues to be addressed and the approach to being adopted;
- The researcher demonstrates relevant background knowledge and/or experience;
- Timetable, resource and budget have all been worked out thoroughly, with most eventualities covered; and
- Useful policy and practice implications.

1.4 Reasons Why Research Proposals Fails

- Aims and objectives are unclear or vague.
- There is a mismatch between the approach being adopted and the issue to be addressed.
- The overall plan is too ambitious and difficult to achieve in the timescale.
- The researcher doesn't seem to have conducted enough in-depth background research.
- Problem is of insufficient importance.
- Information about the data collection is insufficiently detailed.
- Information about the data analysis is insufficiently detailed.
- Timescale is inappropriate and unrealistic.
- Resources and budget have not been carefully thought out.
- This topic has been made so many times before- indicates a lack in background

Chapter Two: Survey Research Method

2.1. Introduction

Survey research is sufficiently similar to other methods of research as to give it a rather lengthy history. In practice survey researches are very much like censuses, differing primarily in that a *survey typically examines a sample from a population whereas a census involves a general enumeration of the entire population*. Censuses, of course, dated back at least to the ancient civilization of some part of the world when it was deemed useful for rulers to obtain empirical data describing their subjects.

The political surveys of research have continued to the present day. Of course, with the continuation of censuses, the appearance of political polls conducted on behalf of candidates, and the uses made by political sociologists. One of the most political uses of the attitudinal survey appeared in 1880. The German political sociologist, K. Marx, mailed questionnaire to some 25,000 French workers to determine the extent of exploitations by employers.

Sociologist Max Weber was also reported to have employed survey research methods in his investigation on the *protestant ethics*. He studied protestant and catholic factory workers to provide confirmed data at the individual level. However, for the most part, contemporary survey research is a product of American researchers in this century.

The present state of the method has resulted from important developmental work in three sectors of the society.

- ✚ The continuing work of the United States Bureau of the Census has been important in the fields of sampling and data collection.
- ✚ The activities of commercial polling firms such as those organized by George Gallup, Elmo Roper, and more recently Louis Harris.
- ✚ Individuals from few American universities- Samuel A. Stouffer and Poul F. Lazarsfeld.

2.2 Scientific Characteristics of Survey Research

Many social researchers strongly believed that survey research provides the best teaching example for instruction in social science methodology. A student who holly knows the logic and skills of survey research will be confidently equipped to learn and to use other social science methods. Survey research is like a crustacean: all bones are on the outside. Thus, it serves a pedagogical function for the good reason that shortcomings, approximations, and compromises of it are made clear than in other social science research methods.

As a scientific undertaking, survey research has the following characteristics:

- It is *logical*,
- It is *deterministic*,
- It is *general*,
- It is *parsimonious*, and
- It is *specific*.

2.2.1 Survey Research is Logical

The format of survey research often permits the rigorous, step-by-step development and testing of such logical explanations. Through the examination of hundreds and even thousands of survey respondents, it is possible to test complex propositions involving several variables simultaneous interaction.

2.2.2 Survey Research is Deterministic

When survey research format permits the rigorous and clear elaboration of a logical model, it clarifies the deterministic system of cause and effect. Moreover, the availability of numerous cases and variables permits the survey analyst to document more elaborate causal processes. He may go beyond the initial observation of a correlation between an independent and dependent variables to examine the role played by several intervening variables.

2.2.3 Survey Research is General

Sample surveys are almost never conducted for the purposes of describing the particular sample understudy. But, they are conducted for the purposes of understanding the general population out of which the sample has initial been selected. Assume the purpose of a research conducted on level of literacy in Gondar town that was studied through a sample composes of 2000 persons in the town. It is very obvious that the purpose of the research was to know the level of literacy in the town not in those 2000 individual persons. However, all the outcomes gained from these sample persons are generalized to all individuals living in the town based on some statistical methods (inferences).

Similarly, the explanatory analyses found from survey research are aimed at the formulation of generalized propositions about human behaviours. This general scientific aim of survey research format is promoted in two specific ways:

1. With a large number of cases studied in a given survey, the analyst can replicate findings among several subsets of the survey research. For example, if a survey analyst finds an overall correlation between religiosity and prejudice, he/ she may easily determine whether this relationship occurs equally among men and women, Protestants and Catholics, whites and blacks; across different social groups and so forth. The replication of finding across different subgroups strengthens the assurance that it represents a general phenomenon in a society.
2. The careful reporting of the methodology of a given survey promotes replication latter on by other researcher and/or among other samples and subgroups. In this way, the generalizability of the findings can be tested and retested.

Survey Research is Parsimonious

A survey researcher has a large number of variables at his or her disposal. This enables to examine the relative relevance of each variable. Like all other scientists, she/he would like to obtain the greatest amount of understanding from the fewest number of variables. However, she/he is not required to guess at the most relevant variable in the initial design of the study.

Since the survey format lends itself to the collection of many variables that can be quantified and processed by machine (computers), the survey analyst can construct a variety of explanatory models and then select the one best suited to his/her aims.

Survey Research is Specific

A survey conclusion that religiosity and prejudice are positively related to one another will be based on specific operational definitions of both religiosity and prejudice. Each of the variables must be constructed from *specific responses to specific questionnaire items, coded and scored in a specific manner*. The conceptualization and measurement of variables lie at the center of science. And if variables are not conceptualized and measured appropriately, observed correlations among such variables may not be meaningful. Thus, if an independent observer disagrees with the measurements, he might logically disagree with the general conclusion.

What is too of overlooked in this situation is the case with which the critical reader can arrive at and perhaps documents his agreement. Since the survey analyst has described precisely how his measurements have been developed and made, the reader knows precisely what they represent. The superficiality and approximations involved in all scientific research are simply more apparent in surveys than any other research methods.

Scientific researches aim at ever more sophisticated and more useful conceptualizations and measurements; but at every step along the way, the method used must be made specific. Survey research is comfortable to this.

Survey Design

2.3.1 Purposes of Survey Research

Different organization use survey research for their own interests. While the variety of such purposes is too great to begin enumerating here, three general objectives crosscut these many concerns:

- + Description,
- + Explanation, and
- + Exploration.

It is worthwhile bearing in mind that a given survey may aims at satisfying more than one of these objectives, but it will be useful to examine them separately for understanding, here.

a) Description

Surveys are frequently conducted for the purpose of making a descriptive assertion about some population discovering the distribution of certain traits or attributes. This implies that the researcher is not concerned with why the observed distribution exists; but merely what that distribution is. For example, ministry of social affair may seek to describe the extent of unemployment among the labour force of the country at a given time, or at several points in time. The percentage of population likely to purchase a new commercial product would still be another example.

b) Exploration

While most surveys aimed, at least in part, at description, may have additional objective of making explanatory assertion about the population from which the sample of the survey has been selected. For example, in studying vote preference, the researcher may wish to explain why some voters prefer one candidate while other voters prefer another. Further instance, in studying unemployment rate the investigator may wish to explain why part of the labour force is employed while the remained is not.

An explanatory objective, almost always, requires a multivariate analysis: the simultaneous examination of two or more variables. For example, preferences for certain political candidates might be explained in terms of such variables as:

- Party affiliation,
- Education,
- Race,
- Sex, and
- Region of the country (capitalist or socialist)

c) Exploration

Survey method can also provide a “search” device when the researcher is only beginning his inquiry into a particular topic. However, the study does not accomplish since it does not answer the basic research questions that prompted the planning of the study.

2.3.2 Units of Analysis

The *units of analysis* are the *things under study* in a given survey research. Typically, the unit of analysis for a survey is a person, but there is no reason why this need be the case, and it often is not. Data are collected for purpose of describing the individual units of analysis; those descriptions are aggregated and manipulated in order to describe the population represented by the units of analysis.

While units of analysis are typically people, they may also be families, cities, states, nations, companies, industries, clubs, governmental agencies, and so forth.

A given survey, of course, may involve more than one unit of analysis. A household survey of a particular city may be aimed at providing the following information:

- ✚ The percentage of residential structures that are in deteriorating conditions,
- ✚ The racial distribution of heads of households,
- ✚ Mean annual family income,
- ✚ The unemployment rate, and
- ✚ The age-sex distribution of the resident population.

In these examples, the unit of analysis would be, respectively,

- ✚ Residential structure,
- ✚ Households, families
- ✚ Members of the labour force, and
- ✚ Resident.

The applicability of survey methods to various units of analysis may sometimes confuse the beginning researcher and result in the selection of an inappropriate unit of analysis for

a particular line of inquiry. Care must be taken in the analysis of several units of analysis at a time.

2.3.3 Basic Survey Design

Survey research can either be cross-sectional or longitudinal survey.

a) Cross-Sectional

In a cross-sectional survey, data are collected at one point in time from a sample selected to describe some larger population at that time. Such a survey can be used not only for the purpose of description, but also for the determination of relationships between variables at the time of the study.

b) Longitudinal Survey

Longitudinal surveys permit the analysis of data overtime: either descriptive or explanatory. Data are collected at different points in time, and the researcher is able to changes in descriptions and explanations. The primary longitudinal designs are trend studies, cohort studies, and panel studies.

i. Trend Studies

Trend studies focus on a particular population, which is sampled and scrutinized repeatedly. While samples are of the same population, they are typically not composed of the same people. Trend studies, since they may be conducted over a long period of time, do not have to be conducted by just one researcher or research project. A researcher may combine data from several studies of the same population in order to show a trend. An example of a trend study would be a yearly survey of librarians asking about the percentage of reference questions answered using the Internet.

It should be noted that trend studies often involve a rather long period of data collection. Typically, the research does not himself collect all the data used in a trend study, but conducts a secondary analysis of data collected over time by several other researchers. Trend studies can also be employed for the relationship between variables over time.

ii. Cohort Studies

Cohort studies also focus on a particular population, sampled and studied more than once. But cohort studies have a different focus. For example, a sample of 1999 graduates of GSLIS at the University of Gondar could be questioned regarding their attitudes toward paraprofessionals in libraries. Five years later, the researcher could question another sample of 1999 graduates, and study any changes in attitude. A cohort study would sample the same class, every time. If the researcher studied the class of 2004 five years later, it would be a trend study, not a cohort study.

A cohort study focus on the same study population each time. The sample can be different.

There are different types of cohort. Some may include age cohort, birth cohort, and so forth.

iii. Panel Studies

Both trend and cohort studies permit the analysis of process and change over times, which is not easily possibly a cross-sectional survey. However, there are several shortcomings. For example, while the researcher may determine through a trend study that voters, as a group, are switching from candidate A to candidate B, he cannot tell which people are switching, thereby hampering his attempts to explain why switching is occurring.

Panel studies allow the researcher to find out why changes in the population are occurring, since they use the same sample of people every time. That sample is called panel. A researcher could, for example, select a sample of UT graduate students, and ask them questions on their library usage. Every year thereafter, the researcher would contact the same people, and ask them similar questions, and ask them the reasons for any changes in their habits.

Limitation of panel studies

Panel studies, while they can yield extremely specific and useful explanations, can be difficult to conduct.

- i. They tend to be *expensive*: while trend studies and cohort studies might be carried out through a secondary analysis of previously collected data, panel studies could not. Consequently, panel studies tend to be expensive.
- ii. They *take a lot of time* - time consuming.
- iii. They *suffer from high attrition rates*. *Attrition* is what occurs when people drop out of the study. Therefore, panel attrition refers to the extent of nonresponses that occurs in later waves of the study interviewing. Some persons interviewed in the first survey may be unwilling, or unable to be interviewed later on.
- iv. *Complexity in analysis*: the analysis of panel data can be rather complicated. The chief analytical device is the *turnover table*, which cross tabulates a given characteristic at more than one point in time. The number of surveys and variables increase across time. As the number of surveys, and numbers of variables increases, the complexity in analysis also increases. This complexity in the number of variables, in turn, increases complexity in the analysis and data presentation to unmanageable extent.

Due to these all limitations, panel studies are less frequently conducted in survey research. However, it is still the most sophisticated survey design for most explanatory purpose.

2.4. Variations on Basic Designs

All survey could be characterized in the terms so far discussed above. At the same time, these two basic designs can be modified in a variety of ways to meet the particular requirements of a given study. Some of the most typical modifications are:

- ✓ *Parallel samples*,

- ✓ *Contextual studies, and*
- ✓ *Sociometric studies.*

2.4.1 Parallel Samples

Sometimes a research problem may be particularly relevant to more than one population. For example, an educational researcher might wish sample students' attitudes towards a proposed students' conduct code. At the same time, he might be interested in knowing how faculty members and perhaps administrators felt about the code. Thus, he could separately sample each population and administer the same or slightly modified questionnaire to each sample. Then the results produced could be compared.

In several instances, the sample from one population could be used to generate the sample from the other. For example, university students might be sampled and questionnaires could be sent to both the students and their parents. The responses given by the students as a whole could be compared with the responses given by their parents as a whole.

2.4.2 Contextual Studies

When data are collected about certain portions of a person's environment or milieu and used to describe the individual, this is called a *contextual study*. As we have discussed, units of analysis earlier (on 2.3.2), persons may be described in terms of groups to which they belong. For example, when a family can be described as being large, members of that family can be described as belonging to a large family.

In the example given under parallel samples, data collected from parents could be used to describe their particular children. Data regarding parents' attitude could be used in the analysis of the attitudes of the students.

2.4.3 Sociometric Studies.

Suppose that the researcher wants to learn something about the selection of close friends among school children. He might conduct a conventional survey among a sample of students and ask them to provide a variety of information about their closest friends. In a sociometric design, he would study all students in a given class and ask each to identify his/her friends by name. In this fashion, he could determine that Alex chose Beniam as his best friend; but Beniam in his turn chose Kebede. Or he might determine that five members of the class chose Betelihen as their best friend; and nobody chose Selam. These sorts of analysis could be extended in complexity to provide a comprehensive explanation of friendship network. However, the investigator would have a whole body of data about the chosen students, including whom they chose so as to explain why certain students were chosen more often than others. This is a sociometric.

2.5. Which Design Would I Select?

Since different researches call for different designs, this question cannot be answered in the abstract. However, it is possible to provide a general guideline as follow:

- ✚ If the researcher's aim is single - time description, then a cross-sectional survey is most probably appropriate;

- ✚ When the researcher is interested in addressing some types of dynamic process-involving a change over time - a longitudinal survey would be remained his preference; and
- ✚ Panel surveys are most feasible longitudinal survey for investigating a phenomenon which is relatively short in duration- for example- otherwise used trend studies.

2.6 Survey Research in Social and Scientific Perspective.

2.6.1 Social Implications of Survey Research

Survey research is appropriate to the study of countless social problems. The alleviation of social problems, such as unemployment demands a concrete knowledge about the nature of the problem. A sample survey could be an excellent method for determining the extent and nature of a given social problem in any locality, and for describing the characteristics of unemployed.

Social problems which require a strong moral foundation and compassion for their solution typically require some form of data. Even if all men were in moral agreement on the need to solve a given social problem, how to solve it becomes a pragmatic issue usually requiring data. A broad consensus to cure a given social problem is not sufficient enough for the solution of the same problem, but it needs some practical issues. And even when moral consensus doesn't exist, firm empirical data become all the more important.

In summary, survey research can potentially serve a wide range of social goals. There is no guarantee that such goals will be served, and surveys may often contribute to improper even immoral actions. But, like a scalped, survey research is a tool, not a moral philosophy. It will be used morally only if moral people learn how to use it.

2.6.2 Scientific Implication of Survey Research

Survey research is well adapted to the basic logic of scientific inquiry, because it is logical, deterministic, general, parsimonious and specific. The specificity of operation that survey demands permits the careful delineation of scientific logic in practice. All the critical decisions relating to measurement and association that are inherent in all research must be made specific within a survey format. For example, while the participant observer can conclude that a given person is unquestionably more conservative politically than another; the survey researcher might agree but would be faced to specify the empirical indicators of conservatism so conceived.

Therefore, a survey researcher is always aware of what decisions he or she has made and how he/she has made them. If his ultimate analysis seems incorrect or misleading, he will be able to evaluate and perhaps modify those either decisions, and analyse his data with as much precisions as before.

The survey researcher is able to conduct a rigorously logical implication of a given interpretation and then tests those implications empirically.

Finally, the permanence of survey data is important for science. At one point in time, a set of survey data may be analysed and found to support a general theoretical perspective. If a theory is subsequently displaced by another, the original survey data may be analysed to determine whether they support the new theory. And the new theoretical understanding may suggest a more refined test of the old theory that was not considered in the original analysis of the data.

2.6.3 Educational Implication of Survey Research

Because survey research is so explicit in its application of scientific logic under field conditions, it provides an excellent pedagogical device for methodological instructions. All research methods face the problems of sampling, conceptualization, and measurement, data collection, and analysis and interpretation, but survey research deals with each of these problems head on (directly). Therefore, training in survey research can give the student a best introduction to the scientific logic underlying such problems and the logical solutions to them.

Therefore, student who fully understands the logic of survey design and analysis should be excellently equipped to learn other social research methods.

2.7 Ethics of Survey Research.

The ethical concern of survey research is not a part of the specific method. However, they comprise a set of norms that scientists in most disciplines are obliged to follow. In many instances, these ethical norms directly conflict with scientific procedures, just as administrative concerns do. Therefore, the researcher should be aware of possible conflicts so as to ultimately conduct the most scientific, ethical research.

There is no way of insuring that all scientists will always be motivated by ethical concerns when they engage in scientific research. Nor is there any way to insure that scientific findings will be used only for ethical purposes. Some of the more common ethical problems that appear in survey research and the suggested solutions to them are presented below.

I. Voluntary Participation

Survey research almost always represents an intrusion into the lives of people's. It often requires respondents to reveal personal information about himself - attitudes and characteristics- that may be unknown to his friends and associates. However, survey research requires that the respondent who reveal such information to complete strange.

Survey research employed the principle that no one should be forced to participate in a research as it was familiar during the Nazi Medical Experimentation in which prisoners were forcefully made participants of the research.

Participation in survey must be voluntary, but this goes directly against a scientific concern. If statistical techniques are used legitimately in survey data analysis, then every member of the random sample should participate (for further details refer Babbie, 1973).

II. No Harm to Respondents

Survey research should never injure the respondents who have volunteered to cooperate with the researcher. The revealing of information would embarrass the respondent or endanger his home life, friendships, job and so forth. It is also possible for the respondent to be harmed in the course of an interview. The researcher should be aware of this, and guard against it.

Often survey forces the respondent to face aspects of him that he doesn't normally consider. The interview may be source of continuing personal agony for him.

There is no way in which the researcher can insure against all these possibilities. But if a given item in a questionnaire or interview seems likely to produce unpleasant reactions for the respondent, the researcher should have the firmest scientific grounds for asking it. Unless it is vital for his research aims, he should not ask it.

Although it often goes unrecognized, respondents can be harmed by the analysis and reporting of data. Finding oneself being characterized in various indexes and tables of the research report, the individual respondent is likely to trouble him and threaten his self-image.

Like voluntary participation, not harming respondents is an easy norm to accept in theory, but it is often difficult to insure in practice. Sensitivity to the issue and experience with its application, however, should improve the researcher battering average.

III. Anonymity and Confidentiality

The main reason for protecting respondent's interests and well-being is to protect his identity. There are two techniques for this: anonymity and confidentiality.

a. **Anonymity**- A respondent may be considered anonymous when the researcher himself cannot identify a given response with a given respondent. This means that an interview survey respondent never be considered anonymous, since an interviewer collects the information from an identifiable respondent. Example of anonymity would be the mail survey in which no identification numbers are put on the questionnaire prior to its return to the research office.

Anonymity implicates any follow-up for increasing response rates. If the researcher does not know who among his sample have failed to replay, he cannot he contact them individually. As an alternative, however, he could mail again to all mail members of the original sample, asking those who had already replied to ignore the second appeal; or he could employ the postcard technique.

In recent studies of drug among university students, researchers decided that they didn't want to know the identity of respondents. There were two reasons for this. First, researcher felt that honestly assuring anonymity would increase the likelihood and accuracy of responses. The second reason is that the researchers did not want to be in the position of being asked for the names of drug offenders.

- b. **Confidentiality** – In a confidential survey, the researcher is able to identify a given person's response but essentially promises (assures) that he will not. For example, in an interview, the researcher would be in a position to make public the income reported by a given respondent, but the respondent is assured this will not be done.

There are several techniques whereby the researcher can better insure his performance on his guarantee. Some of them are:

- ✚ Giving train of ethical responsibilities for interviewers and others with access to respondent identification,
- ✚ Removing of all names and/or addresses from questionnaires and replaced by identification number,
- ✚ Creating a master identification file for linking members to names (to permit the later correlation of missing or contradictory), but this file would not be available except for legitimate purposes.

Whenever a sample is confidential rather anonymous, it is the responsibility of the researcher to make that fact clear to the respondent. The use of the term 'anonymous' to mean 'confidential' should never be tolerated.

IV. Inferred Identity

Even in a truly anonymous survey, it is sometime to identify a given respondent. This is particularly true with open-ended questions. If the respondent lists his occupation or his father's like president of ABC Company, the cat is out of the bag. Therefore,

- ✓ A researcher should never attempt to make such identification,
- ✓ He should insure that his research workers do not make such attempts, and
- ✓ He should never report aggregated data in such a way that will permit readers to make such identification. Don't report aggregated data containing fewer than at least 15 cases per cell in a table.

V. Hidden Identification

Occasionally, some researchers conduct surveys in which respondents are insured anonymity when in fact they are identifiable. Some time, the return addresses of the research office contains a box number with that number being different for each respondent. One occasion, researchers have entered identification number under the stamps placed on return envelopes probably some have written numbers with *lemon juice*.

Therefore, all surveys should be at least confidential.

VI. Identifying Purposes and Sponsors

Often the researcher faces the dilemma that knowledge of his survey's purposes and /or sponsor may affect the answers respondents will provide. In other extreme cases, it may affect the livelihood of corporation. If the interviewer introduces himself as being

engaged in the study of prejudice, the respondent will be rather careful not to sound prejudiced.

Almost any specification of purpose and/or sponsor will have some effect on the completion rate and the answers given by those who participate. These considerations, of course, affect the scientific quality of the data and the conclusion to be drawn from their analysis. Yet, deceiving the respondents as to the study's purpose and/or sponsor raises an ethical issue.

Some scholars in research advice the following guidelines:

- + The researcher should tell nothing about the purpose of the study that is likely to affect the reliability of responses.
- + The researcher should tell the respondents whatever he can about purposes where such information will not likely affect the responses.
- + Explanations of purposes should be kept general Rather specific.
- + The researcher should never offer fictitious reasons for the study.

VII. Analysis and Reporting

Just as the researcher has ethical obligations to respondents, so he has ethical obligations to his readers in the scientific community. These ethical obligations include the following:

1. The researcher should be more familiar with the technical shortcomings of the study than anyone else, and he should make these shortcomings known to his readers.
2. Any defect in the study design or analysis that will have any possible effect on the conclusions drawn should be noted openly.
3. Negative findings should be reported if they are at all reported to the analysis being reported (avoid being only interested in reporting positive findings).
4. Researchers should not fall victims of the temptation of "save face" by describing empirical findings as the products of preplanned analytical strategy when this is not the case.
5. If an unexpected association between variables appears, it should be resulted as unexpected.

2.7.2. Relevant Illustrations

According to Babbie (1973), the following illustrations have been presented as good ethical issues.

- An instructor in Introductory Sociology asks his students to complete questionnaire that he will then use for the analysis of the research problem of interests to him.
- In a proposed study of attitudes among new law school undergraduates, an agreement is made with the state bar association to include a questionnaire in the bar exam materials. Completion of the questionnaire will be a requirement for licensing. Refer the while information on page 355-356.

RESEARCH TENSIONS

1. Misleading People

Sometimes, if the real reasons behind the research were disclosed to those whose behaviour is being studied, they would refuse to co-operate, or alter their behaviour. *Example:* Roy Wallis, a sociologist, wanted to investigate a controversial religious organisation, but he knew the leaders of the movement were unlikely to agree. He covertly joined the movement and participated in an introductory course. As part of this introductory course he had to sign a pledge that he would not disclose to others details of it. He signed this – but went on to publish his view of this course.

Was his behaviour ethical? He argued that it was in the interest of society that he published details of what went on inside secretive organisations. What do you think?

2. Publishing Results

The publication of research findings may prove damaging, embarrassing or offensive to the people involved – either because they are portrayed in an unattractive way, or because they would prefer to keep their attitudes or modes of behaviour private. In any organisation there are likely to be ‘grey’ areas of conduct or attitudes that the organisation would be reluctant to find in the public domain through research. A researcher once said ‘*a good study will make someone angry*’. But the researcher has to bear in mind the possible consequences of the publication of findings. The findings may, for example, be used to disadvantage groups of participants who had been cooperative and helpful in the research, and this can cause researchers some personal distress. Wherever possible, the researcher will want to discuss the issues emerging from the research directly with those touched by it before it is made public.

Another issue concerning publication regards researchers exaggerating or even falsifying research findings to get their work published. The career of an academic is advanced through publications, but unfortunately there have been a few past cases of researchers willing to falsify their findings to gain publicity. This is, of course, highly unethical and immoral – as is agreeing to omit or downplay results to avoid embarrassing a research sponsor. This last point is important, as it can easily happen that research findings are unexpectedly disagreeable to a sponsor of the project, and pressure can be brought to bear on the researcher to ‘play down’, omit, and hide etc., these awkward findings.

3. Confidentiality

This is an important – perhaps the most important – issue to consider in research students need to be aware.

Frequently, the nature of a project necessitates the student having access to sensitive information about a company's business. The company may require the student to keep such information confidential, and occasionally may ask the student to sign a formal confidentiality agreement.

*If the project report contains confidential information the company may ask the University to keep the report confidential. Any such request should be sent **in writing** to the Projects Co-coordinator. After marking, confidential reports*

are kept under restricted access for 2 years instead of being placed in the library. If access needs to be restricted for a longer period application must be made again in writing at the end of this time.

Similarly, if a student is employed by a company to do research, he/she does so on behalf of the company and this should be declared to other parties. It is not acceptable practice to use 'MBA student' as a cover to obtain competitor information.

The last sentence of the above expresses a real fear that companies have, that a student researcher will disclose sensitive company information, divulge market plans, 'steal' information, etc., and students need to be alert and sensitive to these anxieties.

Chapter Three: Sampling Design

3.1 Basic Concepts

Element: a unit about which information is collected and which provides the basis of analysis.

Universe: the theoretical and hypothetical aggregation of all elements as defined for a given survey.

Population: the entire set of relevant units of analysis or data is called the population. This is the general unit of analysis of the research to which generalization is made from the sample. It is an aggregate of all cases that conform to some designated set of specification. It is a theoretically specified aggregation of survey elements.

Survey population: is an aggregation of elements from which the survey sample is actually selected.

Sample: when the data serving as the basis for generalization is comprised of a subset of a population, that subset is called a sample.

Statistic: a particular value of the sample such as the mean (average) income of the sample is known as statistic.

Parameter: a particular value of the population such as the median income or the level of formal education of a population is called a parameter.

Sampling: is a statistical process in which we select and examine a sample from a general population instead of considering the whole population.

The sample unit: a single member of a sample population is referred to as a sampling unit. Usually sampling units have numerous attributes, one or more of which are relevant to the research problem. A sample unit is not necessarily an individual. It can be an event, an organization, a city, or a nation.

Observation unit (unit of data collection): is an element or organization of elements from which information is collected.

Finite and infinite populations: a population may be finite or infinite, depending on whether the sampling units are finite or infinite. A finite population contains a countable number of sampling units, for example, all registered voters in a particular city in a given year. An infinite population, on the other hand, consists of an endless number of sampling units, such as unlimited number of coin tosses.

Variable: a set of mutually exclusive characteristics such as sex, age, etc.

Survey sampling: sampling is designed to produce information about particular characteristics of a finite population is usually termed as survey sampling.

Sampling frame: once researcher has defined the population, they draw a sample that adequately represents the population. The actual procedure involves in selecting a sample from a sampling frame comprised of a complete listing of sampling units. Ideally, the sampling frame should include all the sampling units in the population. In practice, a physical list rarely exists; researchers usually compile a substitute list. In smaller studies, the sampling frame may be based on telephone directories, city directories, or membership lists of private and public organizations. The researcher should ensure that there is a high degree of correspondence between a sampling frame and the sampling population.

Sample size: is the total number of units of analysis in the sample.

Sampling error: is a mistake that was made in selecting a sample. However, it is, statistically, a deviation from what actually exists in the population (Refer Sirkim, 1999: 199 - 200). Therefore, parameter value – statistic value = sample error.

Nonsampling error: is an error in measurement, calculation, recording, etc.

3.2. Aims of Sampling

Using of samples has several benefits. But, the following are the most important ones:

- cost effective,
- time saving (greater speed),
- Accuracy (when the number of population increases, accuracy decreases and vice versa),
- More meaningful (reduces destruction of items),and
- Greater scope – when a person uses it under circumstances where human and material resources are limited.

3.3. Types of Sampling/Sample Design

In research there are two types of sample designs: probability and nonprobability sampling.

3.3.1. Probability Sampling

Probability sample designs permit the researcher to specify the probability (chance) of each sampling unit of being included in the sample in a single draw from the population. In probability sampling, the manner in which the sample units are selected is very important. The process usually entails drawing subjects from an identified population such that every unit in the larger population has precisely equal chance of being selected as every other unit in that population. This process is called *randomization* (random sampling).

3.3.2. Probability Sampling Designs

From the above discussion, we have seen that probability sample designs permit the researcher to specify the probability of each sampling units being included in the sample

in a single draw from the population. In such type of sample, there are several different designs on the basis of various factors. Some of these designs include the following:

- ✚ Simple random sampling,
- ✚ Systematic random sampling,
- ✚ Stratified sampling,
- ✚ Cluster sampling,
- ✚ Multistage sampling (stratified cluster sampling), and
- ✚ Disproportionate sampling.

A. Simple Random Sampling

Simple random sampling is the basic probability sampling design, and it is incorporated into all the more elaborated probability sampling designs. Simple random refers to the procedure that gives each of the sampling units of the population (N) an equal and known probability of being selected.

Simple random sampling (SRS) is the basic sampling method assumed in survey statistical computations. For example, when you toss a perfect coin, the probability that you will get a head or a tail is equal and known, i.e., 50%, and each subsequent outcome is independent of various outcomes.

The lottery and random table method are the two techniques which are employed in simple random sampling. Please refer the random digits table on the next page. Scientists usually use computer programs or tables of random digits to select random sample. Such a table is quite simple to use.

For example: In a cost containment study of a regional hospital, patients' records are to be examined. There are $N = 100$ patients' records from which a simple random sample of $n = 10$ is to be drawn.

1. We can number the accounts beginning with 001 for the first account and ending up with 100 for the hundredth account. Note that we have assigned a three digit number to each record in our population. If the total number of records were 1250, we would need four-digit number (0001 - 1250).
2. Now refer to the random digit table in the next page and use the first column. You will notice that each column contains five-digit number. If we drop the last two digits of each number and proceed down the column, we obtain the following three digit numbers.

101	854	521	007*
223	289	070*	053*
241	635	486	919
421	094*	541	005*
375	103	326	007*
779	071*	293	690
995	510	024*	259
963	023*	815	097*
895	010*	296	

We do not need to list more number since we already have 10 different numbers that qualify for our sample. Thus, the only number that fall between the ranges we specified (001-100) are: 094, 071, 023, 070, 024, 007, 053, 005 and 097.

3. We need not start with the first row of column one. We can select any start point.

LIMITATIONS

Simple random sampling has two primary limitations:

- Because all possible samples are equally likely to be selected, by definition, the sample points could, by random chance, not be uniformly dispersed in space and/or time. This limitation is overcome somewhat as the sample size increases, but it remains a consideration, even with a large number of samples.
- Simple random sampling designs ignore all prior information, or professional knowledge, regarding the site or process being sampled, except for the expected variability of the site or process measurements. Prior information almost always can be used to develop a probability-based sampling design that is more efficient than simple random sampling (i.e., needs fewer observations to achieve a given level of precision).

Because of these limitations, simple random sampling is seldom recommended for use in practice except for relatively uniform populations. Stratified simple random sampling is commonly used to overcome these limitations by defining geographic and/or temporal sampling strata. Alternatively, one may use systematic sampling or quasi-random sampling to overcome these same limitations. Nevertheless, simple random sampling is a fundamental building block and benchmark for most other sampling designs.

IMPLEMENTATION

This section discusses how to determine the minimum sample size needed with simple random sampling to (1) estimate a population mean or proportion with prespecified precision or (2) test a hypothesis regarding a population mean or proportion with a prespecified significance level and power.

B. Systematic Random Sampling

Systematic random sampling involves in selecting of K^{th} sampling unit of the population after first sampling of unit is selected randomly from the total sampling unit. For example, if we wish to select a sample of 100 persons from the population of 10,000, we would take every 100th individuals ($K = N/n$). The first selection is determined by some process such as the use of table of random digits. Assume that the 8th person were selected, the sample would then consist of individuals numbered 8, 108, 208. . . 9908.

Systematic random sampling is more convenient than simple random sampling. It is much simpler than to instruct untrained interviewers to select every K^{th} persons from a list than to have them use a table of random digits.

Systematic samples are also more amenable for use with very large population or when large samples are to be selected.

There is one danger involved in a systematic random sampling. The arrangement of elements in the list can make a systematic sampling unwise. If the list of element is arranged in a cyclical pattern that coincides with the sampling interval, it is possible that grossly biased sample may be drawn.

Example 1: In one study of soldier during WW II, the researcher selected a systematic random sample from unit rosters. However, the rosters were arranged in a table of organization: sergeants' fist, then corporals and private squads by squad and each quad had 10 members. As a result, every 10th person on the roster was a squad sergeant. This definitely shows that the sample was not a representative sample of the population from where it was selected out.

Example 2: Suppose that we wish to select a sample of apartments in an apartment-building. If the sample were drawn from a list of apartments arranged in numerical order (e.g. 101, 102, 103, 104, 105, 201, 202, 203, 204, 205, and so forth), there would be a danger of the sampling interval coinciding with the number of apartment on a floor or some multiple hereof. The sampling might include only northwest corner apartments or only apartments near the elevator. If these types of apartments had some other particular characteristics in common (e.g. higher rent), the sample remains biased.

Therefore, when we are interested in using systematic random sampling from a list, we should carefully examine the nature of that list. If the elements are arranged in any particular order, we should better use a simple random sampling.

C. Stratified Sampling

We use stratified sampling primarily to ensure that different groups of population are adequately represented in the sample in order to increase their level of accuracy when we estimate parameters. Besides, stratified sampling reduces the cost of execution.

The underlined idea in stratified sampling is to use available information on the population for the purpose of dividing it into groups such that elements within each group are more alike than are the elements in the population as a whole. For example, suppose that it is known that there are 700 whites, 200 blacks, 100 Indians in a given population. If a random sample of 100 people were drawn, you would probably not get exactly 70 white, 20 blacks and 10 Indians. The proportion of Indians in a particular sample selected by simple random sampling might be relatively too small. However, a stratified sample of 70 whites, 20 blacks and 10 Indians would ensure better representation of these groups. Stratification doesn't violate the principle of random selection because a probability sample is subsequently drawn within each stratum. Generally, a researcher should identify his basis for stratifying the population into different strata.

Now, consider what happen if there were four bases for stratification.

Sampling from different strata can be either proportional or disproportional. If we select the same number of sampling units from each stratum, or a uniform sample fraction (n/N), the sample is known as a **proportionate stratified sample** because the sample size drawn from each stratum (n) is proportional to the population size of the stratum (N). However, if the total number (N) in each stratum is different, i.e., if there are variable sampling fraction, the sample is **disproportionate stratified sampling**. When researchers use a disproportionate stratified sample, they have to weight the estimates of the population parameter by the number of belonging to each stratum. For example, in A study of revitalization in an urban neighbourhood, we plan to examine the attitudes of new residents towards their community. Therefore, as a means of ensuring proper representation of groups of homeowners and renters, we will use a proportional stratified sampling with two strata: new renters and new homeowners. The population (N) = N_1, N_2 ; N_1 = new homeowners and N_2 = new renters. If $N_1 = 200$ and $N_2 = 300$, then $N = 500$.

We decide to select a proportional sampling fraction of $1/10$ from each stratum. Thus $N_1 = 20$ and $N_2 = 30$ will be included in the sample. We then apply the simple random sampling procedure separately to each list.

LIMITATIONS

Stratified sampling needs reliable prior knowledge of the population in order to effectively define the strata and allocate the sample sizes. The gains in the precision, or the reductions in cost, depend on the quality of the information used to set up the stratified sampling design. Any possible increases in precision are particularly dependent on strength of the correlation of the auxiliary, stratification variable with the variable being observed in the study. Precision may be reduced if optimal allocation is used and if the auxiliary variable used for the optimization calculations does not accurately reflect the variability of observations for the study.

As with simple random sampling, with a stratified sampling plan the investigator may encounter difficulties identifying and gaining access to the sampled locations in the field. Such limitations may reduce the expected gains in precision anticipated by using a stratified sampling scheme.

D. Cluster Sampling

Cluster sampling is frequently used in large scale-studies, because it is the least expensive sample design. It involves first selecting larger group which are called clusters, and then selecting the sampling unit from the clusters. The clusters are selected by simple random sampling or a stratified sampling. For example, in a study focused on interviewing dwellers of an urban community, no list of resident adults is available, and thus cluster sampling is used as the sampling design. Therefore, the selection of a sample here involves the following stages.

Stage one:

1. Define the area to be covered using an up-to-date map.
2. Divide the entire area into blocks.
3. Number the blocks, preferably serially and in a separating fashion.
4. Select a simple random or systematic random sample of blocks.

Stage two:

1. List and number all dwelling units in each of the selected blocks.
2. Select a simple random or systematic sampling of dwelling units.
3. Interview selected individuals, within each selected dwelling unit.

EXAMPLES OF PROBABILITY SAMPLING

Random	Systematic	Cluster	Stratified
000000	0000X	00000	00X00
00X00	0000X	00000	0X000
000000	0000X	00000	000X0
X00000	0000X	XXXXX	
00000X	0000X	XXXXX	00000
000000	0000X	XXXXX	X0000
00XX00	0000X	00000	XX00
000000	0000X	00000	000X0
0000X0	0000X	00000	

Nonprobability Sampling

Nonprobability sampling is applicable where the researcher has little initial control over the choice of who is presented for selection, or where controlled selection of participants is not a critical factor. Therefore, nonprobability sampling techniques are used for the following reasons:

- ✚ When probability sampling would be prohibitively expensive, and
- ✚ When precise representativeness is not necessary.

Three major designs utilizing nonprobability samples have been employed by social scientists:

- ✓ Convenience sampling,
- ✓ Purposive sampling/judgment sampling,
- ✓ Quota sampling,
- ✓ Voluntary sampling,
- ✓ Snowball sampling,
- ✓ Event sampling,
- ✓ Time sampling.

A Convenience Sampling: (sampling those most convenient; those immediately available). Here, researchers may select whatever sample units which are conveniently available. For example, a researcher may take the first 200 people encountered on the street who are willing to be interviewed. In such type of sampling, the researcher has no way of estimating the representativeness of the sample, and therefore, cannot estimate the population parameter.

Limitations

- It does not allow the level of confidence/uncertainty of the researcher.

➤ It limits statistical inference

B Purposive Sampling/Judgment Sampling: (enables you to use your judgement to choose people that are presented or are available that best meet your objectives or your target groups). In the case of judgement sampling, researchers select sampling units subjectively in an attempt to obtain a sample that appears to be representative of the population. It totally depends on the researcher's subjective judgement which cannot be possible to determine why he/she judges why the sampling unit is selected.

C. Quota Sampling: the main goal of quota sampling is to select a sample that is as similar as possible to the sample population. For example, a researcher found that 48% of population was women. Therefore, in his sample of 200 persons 96 were women.

D Voluntary Sampling :(the sample is self-selecting; they come forward voluntarily in response to an appeal)

E 'Snowball' sampling: (is building up a sample through informants. You start with one person – who then suggests another & so on)

F Event Sampling: (using the opportunity presented by a particular event, e.g. a conference, to make contacts)

G Time Sampling: (recognizing that different times or days of the week or year maybe significant and sampling at these times or days.

Chapter Four: Conceptualization, Definition, Index Construction, Scaling Method and Measurement

Concepts Conceptualization and Operationalization

A concept is an abstraction - a symbol - a representation of an object or one of its properties, or of a behavioural phenomenon. Scientists begin the process of research by forming concepts as a short hand for describing the empirical world, for example, *social status, social role, power, bureaucracy, relative deprivation, and cohort* are common concepts in sociology. Similarly different disciplines have their own familiar concepts. Therefore, conceptualization is the process of the application and creation of *concepts in any field of study*.

Operationalization is the process whereby the *researcher specifies* empirical observations that may be taken as indicators of attributes contained within a given concept. If the concept is religiosity, operationalization is the process of specifying empirical measurements that will indicate where respondents are highly religious, moderately religious, *unreligious*, etc. Typically, the researcher will specify several

such indicators and combine those during the analysis of data to provide a composite measure (index and scale) representing the concept.

4.1.1. Function of Concepts

Concepts serve a number of important functions in a social research. They:

1. provide a common language, which enable scientists communicate with one another;
2. give scientists a perspective - a way of looking at phenomenon;
3. allow scientists to classify their experience and to generalize from them. They structure, categorize, order and generalize their experiences, and observations in terms of concepts; and
4. are components of theories - they define a theory's content and attribute. For example the concepts 'power' and 'legitimacy' define the substance of theories of governance.

4.2. Definitions

Different concepts for different people are different. However, this does not create major problems in everyday communication. But, science cannot progress with ambiguous and imprecise language. Therefore, any scientific discipline is concerned with its vocabulary by necessity.

Social scientists have attempted to establish a clear and precise body of concepts to characterize their subject matter. To achieve clarity and precision in the use of concepts during research, scientists employ two types of definitions: *conceptual* and *operational*.

4.2.1. Conceptual Definition

Conceptual definitions are definitions that describe concepts by using other concepts.

E.g. **power**: an ability of an actor to get another actor to do something that the latter would not otherwise do.

Relative deprivation: is an actor's perception of discrepancy between individual's value expectations and his or her value capabilities.

This process of defining concepts using other concepts may continue. But, at a certain point in time in this process, scientists encounter concepts that cannot be defined by other concepts. There are called *primitive terms* which are not vague and ambiguous. Some of the examples of such terms include colours, sounds, smells, and tastes. These primitive terms are used for the above-mentioned definition.

Conceptual definitions, therefore, consist of *primitive terms* and derived terms. Derived terms are those that can be defined by the use of primitive terms

A crucial point to remember is that conceptual definitions are neither true nor false; and more of a synonymous to dictionary meaning.

Attributes of conceptual definitions

- ✓ It must point out the unique attributes of whether is defined,
- ✓ A definition should not be circular: it must not contain any element of the phenomenon or object being defined. For example, a “bureaucracy is an organization with bureaucratic qualities or power as a quality shared by powerful people,” is a circular definition,
- ✓ A definition should be stated positively. For example, intelligence is a property that lacks colour, weight and character. This example is stated negatively.
- ✓ A definition should use clear terms, terms whose meaning is agreed upon by anyone. For example, conservative means different thing to different people. So it should not be used in a definition.

4.2.2. Operational Definitions

Operational definitions bridge the conceptual (theoretical) and empirical (observational) levels. An operational definition sets forth a set of procedures that describes an activity that a research needs to perform to empirically establish the existence of a phenomenon described by a concept.

Operational definitions make the meanings of concepts concrete by laying out the *measuring procedures* that provide the empirical criteria for the scientific application of concepts. Therefore, operational definitions make it possible to confirm the existence of concepts that have no a directly observable characteristics.

Generally, an operational definition describes a set of procedures that a researcher can follow in order to establish the existence of the phenomenon described by a concept. Scientists require the use of operational definitions when phenomenon cannot be observed directly.

Therefore, concepts have both *conceptual and operational components*. Integrating the two is the problem faced by social scientists. The researcher can begin either on the conceptual or operational level. However, the two aspects must support and complement each other. For example, the conceptual definition of *alienation* attributes five meanings:

- + Powerlessness
- + Meaninglessness,
- + Formlessness,
- + Isolation, and
- + Self-estrangement

4.3. Index Construction and Scaling Methods

Indexes and scales are measuring instruments of social sciences researches. They are means of measuring complex phenomena. In most cases, they are composite measure constructed by combining two or more variables which are employed as indicators. These are technically referred to as items. For instance, *socioeconomic status* is a common index constructed by combining three indicators: *income, education, and occupation*.

There are several **reasons for the application of indexes and scales**. Some of them include:

1. They enable the researcher to represent several variables by a single score that reduces the difficulties of dealing with complex data.
2. They provide quantitative measures that are amenable to more precise statistical manipulation.
3. They increase the reliability of measurement.

Scales differ from index by their greater rigor.

4.3.1. Index Construction

Index is the combination of two or more items or indicators that yield a composite measure. For example, in *economics*, the *consumer price index* is a composite measure of changes in a retail prices. The retail prices that make up the index are composed of eight major groups: food, housing apparel, transportations, medical care, personal care, reading and recreation, and other goods and services.

There are four major problems involved in constructing indexes

- Defining the purpose of the index;
- Selecting and collecting data;
- Selecting the basis for comparison; and
- Selecting methods of aggregation and weigh.

For more explanations, please refer Frankfort, et. al. (1996: 55-64).

4.3.2. Scaling Methods

A. Likert Scale: is a method designed to measure attitudes. There are six steps in likert scale construction.

1. compile possible scale items,
2. administer these items to the random sample respondents,
3. compute a total score for each respondents,
4. determine a discriminative power of items,
5. select the scale item, and test reliability.

In the first step the researcher compiles a series of items that express a wide range of attitudes from extreme positive to extreme negative. Each item requires the respondent to check one of the offered five fixed alternative expressions, such as:

- ❖ strongly agree,
- ❖ agree,
- ❖ undecided (neither agree nor disagree),
- ❖ disagree, and
- ❖ strongly disagree.

Optional expressions include:

- ❖ almost always,
- ❖ frequently,
- ❖ occasionally,

- ❖ rarely, and
- ❖ almost never.

In this five-point continuum, values of 1, 2, 3, 4, 5 or 5, 4, 3, 2, 1 are assigned, and they express the relative weights and their directions. See the following example:

1. most companies are unfamiliar with older employers
 - strongly agree
 - disagree
 - Agree
 - strongly disagree
 - Uncertain
2. I think that older employees make better employ
 - strongly agree
 - disagree
 - agree
 - strongly disagree
 - uncertain
3. In a case where two people can do a job about equally well, I would pick the older person for the job.
 - strongly agree
 - disagree
 - agree
 - strongly disagree
 - uncertain
4. I think the older employees have much ability to learn new methods as other employees.
 - strongly agree
 - disagree
 - agree
 - strongly disagree
 - uncertain

Here, strongly agree = 5, agree = 4, uncertain = 3 disagree = 2, and strongly disagree = 1. The total score will be $4 \times 5 = 20$. If a respondent checked 'strongly agree' in item 1 (score 5) 'uncertain' in item 2 (score 3), agree in item 3 (score 4), and disagree in item 4 (score 2), the total score will be $5 + 3 + 4 + 2 = 14$ that can fall in the scale between 4 (negative) and 20 (positive).

B. Other Composite Measures

Please refer Babbie (1973: 254 – 277)

Social scientists have developed various scaling procedures that incorporate a number of features from Likert scaling technique, such as Guttman scale.

Guttman Scaling

This scaling method first developed by Louis Guttman in the early 1940s. It was designed to incorporate an empirical test of unidimensionality of getting of items within the scale construction process. According to Guttman, if the item comprises the scale tap the same attitudinal dimension, they can be arranged on a continuum (range) that indicates varying degrees of one underlying dimension.

4.4 Measurements

4.1.1. The Nature of Measurement

Measurement is closely related with the concept of *operational definitions* discussed earlier. Operational definitions are measurement procedures bridging the conceptual (theoretical level) with the empirical (observational level).it is a procedure in which a

researcher assigns numerals (numbers or other symbols) to empirical properties (variables) according to rules.

The properties (variables), the numerals, and the rules for assignment were contained in instructions that you also specified. For example, suppose that you intend to purchase a new car having found that the difference in prices among the various compact cars in minute, you decide to make the purchase on the basis of which model best meets the following requirements: *design, economical operation, and service*. These three features vary. One model may be well-designed and economical to operate, but the service supplied by the manufacturer may be unsatisfactory. As a result, you decided each of three features on a scale of five numbers: 10, 11, 12, 13, and 14. Number 10 indicates total dissatisfaction, and number 14 stands for complete satisfaction. See the following table.

Preference Ranking

<i>Car</i>	<i>design</i>	<i>economy</i>	<i>service</i>
<i>A</i>	<i>11</i>	<i>11</i>	<i>10</i>
<i>B</i>	<i>13</i>	<i>14</i>	<i>12</i>
<i>C</i>	<i>14</i>	<i>14</i>	<i>14</i>
<i>D</i>	<i>14</i>	<i>12</i>	<i>13</i>
<i>E</i>	<i>10</i>	<i>12</i>	<i>14</i>

4.4.2. Levels of Measurement

There are four principal levels of measurement: *nominal, ordinal, interval, and ratio*. Each level of measurement has its own rational.

A. Nominal Level of Measurement (*with no meaningful inequality, difference and quotient*)

It is the lowest level of measurement. At this level, numbers or other symbols are used to classify observation into a number of categories. They are nominal or classificatory scales. For example, in a given population if 1 stands for males and 2 for females, then the population is classified into two categories. As a rule, when a set of objects can be classified into categories that are exhaustive and mutually exclusive, and when each category is presented by a different symbol, a nominal level of measurement is attained. *Gender, nationality, ethnicity, religion, marital status, place of residence, and party identification* are all nominal variables.

At the nominal level, scientists can classify objects by utilizing any set of symbols. He can also change the symbols without altering any information if he or she does so consistently and completely. Accordingly any statistics that are unaffected (i.e., remained unchanged by such transformations) are permissible at the nominal level. These statistics include the mode, measure of qualitative variation, and appropriate measure of associations.

B. Ordinal Level Measurement (*only with meaningful inequality*)

Scientists deal with many variables that are not only classifiable, but also exhibit some kind of relations. Typical relations are higher, greater, more desired, more difficult etc. Such relations may be designated by the symbol $>$. E.g.

Rank	Value
1	Strongly agree

2	Agree
3	Disagree
4	Strongly disagree

C. Interval Level of Measurement *(with meaningful inequality and difference)*

In addition to being able to rank set of observations in terms of the $>$ relation, we also know the exact distance between each of the observations and this distance is constant, and then you have reached an interval level of measurement. Now you can specify by exactly how many units the former is greater than the latter. For instance, Ato Kebede earns more than Ato Alemu. Here, even we know the amount of money that the two individuals earn for comparison. To make these quantitative comparisons, we must have a precise measurement. Then an interval level of measurement is characterized by a common and constant unit of measurement that assigns a real number to all pairs of objects in the ordered set. For example, the ratio between the scores of 66% and 99% would be the same as between, say, scores of 528 and 792, i.e., $2 : 3$. Therefore, the qualitative distance between the two measuring systems would remain the same. Some examples of variables measured at the interval level are *income*, *Intelligence Quotient (IQ)*, *scholastic aptitude test (SAT) scores*, *voter turnout*, and *crime rate*.

Properties of Interval Level of Measurement

1. Uniqueness: if **a** and **b** stands for real numbers, then $\mathbf{a + b = b + a}$ and $\mathbf{a \times b}$ represent one and only one real number.
2. Symmetry: if $\mathbf{a = b}$, then $\mathbf{b = a}$.
3. Commutation: if **a** and **b** denotes real numbers, then $\mathbf{a + b = b + a}$ and $\mathbf{ab = ba}$.
4. Substitution: if $\mathbf{a = b}$ and $\mathbf{a + c = d}$, then $\mathbf{b + c = d}$; and if $\mathbf{a = b}$ and $\mathbf{ac = d}$, then $\mathbf{bc = d}$.
5. Association: if **a**, **b** and **c** stands for real numbers, then $\mathbf{(a + b) + c = a + (b + c)}$, and $\mathbf{(ab) c = a (bc)}$.

D. Ratio Level of Measurement *(with meaningful inequality, difference and quotient)*

Variables that have *natural zero* (if zero indicates for the absolute absence of the variable) points can be measured on the ratio level of measurement. Variables, like weight, time, height, length, area, volume, and so forth have natural zero points and are measured at the ratio level. Here, the ratio of any two numbers is also independent of the unit of measurement.

What is the difference between interval and ratio level of measurements?

They are similar and the rulers by which numbers are assigned are the same, with one exception. For the ratio level of measurement, we apply the *arithmetic operations and numbers* to the total amount measured from one absolute zero point; but, for interval level, we apply the operations to differences from an arbitrary point.

A ratio level of measurement, which is most commonly encountered in the physical sciences, is achieved only when it is possible to attain all for of the following relations:

- ✚ Equivalence,

- ✚ Greater than,
- ✚ Known distance of any two intervals, and
- ✚ A true zero point.

Summary of the Four Levels of Measurements

- **Nominal level:** at the nominal level, numbers or symbols are used to classify objects or observations. It has the property of equivalence.
- **Ordinal level:** when variables exhibit a relation to each other, they can be measured at the ordinal level. Such relations can be designed by the symbol $>$. It also has the property of equivalence.
- **Interval level:** when the exact distance between each of the observation is known and constant, measurement is carried out at the interval level. Phenomena of this level also displays the property of equivalence and the observation can be greater (or smaller) than another.
- **Ratio level:** when variables have natural zero points, they can be measured in ratio level of measurement. This level also has the property of equivalence, relations in which one variable can be greater than another, and a fixed interval.

4.4.3. Data Transformation

Variables that can be measured at the ratio level can also be measured at the interval, ordinal and nominal levels. **As a rule, properties that can be measured at a higher level can also be measured at the lower level of measurement, but the opposite is not true.**

The formal properties that characterized each level of measurement are summarized in the table below.

Level	equivalence	Greater than	Fixed interval	Natural zero
Nominal	Yes	No	No	no
Ordinal	Yes	Yes	No	no
Interval	Yes	Yes	Yes	no
Ratio	Yes	Yes	Yes	yes

Therefore, data can only be transformed from the higher level of measurement to the lower level, but it is not vice versa.

4.4.4 Measurement

Measures are seldom perfect and often indicate not only real differences but also artifact difference, variations produced by the measuring procedure itself. Differences in measurement scores that are due to anything other than real differences are termed as **measurement errors**

Sources of measurement error

- ❖ The source obtained may be related to an associated attribute => related with extraneous variable values.

- ❖ Measurement error may be resulted from differences in temporary conditions such as health or mood that may affect a person's response to questionnaires or a person's behaviour.
- ❖ Differences in setting (environment) in which the measure is used to contributed to measurement error. For example, age, race, and gender of interviewers influence the answers of survey respondents.
- ❖ Differences in the administration of the measuring instrument, for instance, poor light, noise, and tired interviews can lead to measurement error.
- ❖ Measurement errors also result from differences in processing (when different coders code similar answers to a question differently).
- ❖ Measurement error occurs when different people interpret the measuring instrument in different ways.

The errors arise from these six sources are either *systematic* or *random* errors. Systematic errors are produced whenever the measuring instrument is used, and they are constant between cases and studies. They constantly introduced a measure of invalidity of the findings. Random errors by contrast, affect each usage of the measuring instrument in a different way.

The seriousness of the issues of validity and reliability are issues that prompted the introduction of techniques for reducing measurement errors.

a. Validity: is concerned with the question "Am I measuring what I intent to measure?" since measurement in the social sciences is, with some exceptions, indirect, researchers are never completely certain that they are measuring the variables for which they are formulated their measurement procedures.

There are three types of validity; each of them is concerned with a different aspect of the measurement situation. These include *content* validity, *empirical* validity and *construct* validity.

i. Content Validity: There are two variety of content validity: *face validity* and *sampling validity*. Face validity depends on the investigator's subjective evaluation of the validity of a measuring instrument. Thus, face validity does not relate to the question of whether an instrument measures what the researcher wishes to measure; rather it concerns with the extent to which the researcher believes that the instrument is appropriate.

The main problem with face validity is that there are *no precisely replicable procedures for evaluating the measuring instrument*.

The main concern of sampling validity is whether a given population is adequately sampled by the measuring instrument in question. In other words, do the statements, questions, or indicators adequately represent the property being measured? The assumption for sampling validity is that every variable has a content population consisting of a large number of items and that a highly valid instrument constitutes a representative sample of these items.

ii. Empirical Validity: is concerned with the relationship between a measuring instrument and the measuring outcomes. If a measuring instrument is valid, there should be a strong relation between the results produced by applying the instrument and the real relationships existing among the variables measured. For example, an educator might want to know if the scores obtained by the IQ test he or she was employing really reflect the intelligence of the subject. The investigator gathers evidence to support the existence of a relation by using *measures of correlation* appropriate to the level of measurement. The correlation coefficient (R^2) is an index of the degree of relationship between two measures or variables (you can have a detailed explanation about this in your course *Introduction to Statistics*).

iii. Construct Validity: is established by relating a measuring instrument to a general theoretical framework so as to determine whether the instrument is tied to the concepts and theoretical assumptions researchers are employing.

b. Reliability: refers to the extent to which a measuring instrument contains variable errors (errors that appear inconsistently from observation to observation during anyone measurement attempt or that vary each time a given unit is measured by the same instrument). For instance, if you measure the length of a table two points in time with some instruments, the instrument contains variable errors.

Some causes for variable measurement errors include:

- ✚ Respondent's memonetary distraction when competing a questionnaire,
- ✚ Ambiguous instructions, and
- ✚ Technical difficulties (e.g. a pencil breaks while the respondent is filling in a questionnaire).

Then each measurement contains two components:

- ✓ a true component, and
- ✓ an error component

Therefore, reliability can be defined as the ratio of the *true score* variance to the total variance in the scores as measured.

$$\text{Reliability} = \frac{\sigma_t^2}{\sigma_x^2} = \frac{\sigma_x^2 - \sigma_e^2}{\sigma_x^2}$$

Where σ_x^2 is variance of observed scores

σ_t^2 is variance of true scores

σ_e^2 is variance of true errors

From the above equation, we can see that $\sigma_x^2 = \sigma_e^2$ if measurement involves nothing but error, and the reliability is zero. However, there is no variable error at all, $\sigma_e^2 = 0$, and the

ratio defined as reliability becomes $\sigma_x^2/\sigma_x^2 = 1$. Subsequently, the variability measure varies on a scale from zero to one.

In practice, it is possible to compute the true score independently of all the error that occurs in any particular measurement. As a result, the ratio σ_t^2/σ_x^2 has to be estimated.

There are three common ways of estimating reliability: the test-rest method, the parallel form method, and the split-half method (for a detailed explanation, please refer Frankfort, Chava, et. al. 1996: 172-174).

Chapter Five: Instruments of Data Collection

5.1. Questionnaire

A survey is usually thought of as a means of collecting a great deal of aggregate data at a very brief period of time. Such types of survey are known as a questionnaire-based survey.

Many points are there to remember when designing and using questionnaire. These points are:

1. Questionnaires facilitate the collection of data by asking all, or a sample of people, to respond to the same questions. They can be in both *printed* and *electronic* forms (on-line).
2. **There are five types of questionnaire approaches:**
 - ✦ on-line (electronic),
 - ✦ postal (printed),
 - ✦ delivery and collection (printed),
 - ✦ telephone (electronic/printed), and
 - ✦ Interview face-to-face/group (electronic/printed).
3. You need to be absolutely clear before you design a questionnaire about what it is you want to learn and what data you need to obtain to enlighten you in this research. You also need to think ahead about how you are going to collate the information you gather. There is no point in designing a questionnaire that produces a range of information you find very difficult to collate in any meaningful quantitative or qualitative way.
4. The validity (the extent to which the data accurately measure what they were intended to measure) and reliability (the extent to which the data collection method will yield consistent findings if replicated by others) of the data you collect depends on the design of the questionnaire and the words that you use.
5. Questions can be *open* and *closed*: an open question is posed, but space is left for the respondents own answer, e.g. "Please tell me which brand you prefer and why in the space that follows." Closed questions are questions in which there are only a limited number of alternative responses. This can be in list, category, ranking, scale/rating, grid or other quantitative form. They can be pre-coded on questionnaire to facilitate analysis, e.g. "Please tick the box shown below with the brand you prefer."
6. Questionnaires may be two types: *self-administered* and *interviewer-administered*.
7. The order and flow of questions should be logical to the respondent.

8. There can be a low rate of return with questionnaires, so they need to be introduced carefully and courteously to potential respondents. This introduction can include the using of covering letter; offering a prize and other inducement can also improve the rate of returns of questionnaires.
9. all questionnaires should be piloted, if possible, with a small group before the main research to assess their values, validity, and reliability.

5.1.1. The Questions

The questions of the questionnaire can either be *open-ended* or *close-ended*. Each has its own formats, and advantages and disadvantages. The advantages and disadvantage of both **open-ended and close-ended questions** of a questionnaire are given in the following table.

Open questions	Closed questions
Advantages <ul style="list-style-type: none"> • Enable you to get below the surface, explore and probe. • Encourage respondents to think and offer considered answers. • Encourage respondents to give honest opinion. 	Advantages <ul style="list-style-type: none"> • Often easier for respondents (particularly those who are busy) to answer. • Easier to collate than open questions. • The questionnaire can easily be reproduced by other respondents whom you wanted to test your findings.
Disadvantages <ul style="list-style-type: none"> • The responses can be hard to collate (to arrange). • The research may be difficult for others to reproduce, so your findings may be open to double question. 	Disadvantages <ul style="list-style-type: none"> • They limit the choices (of answers) to respondents and give them less control over their responses. • It is harder to get below the surface of an issue.

Types of Questions

There are three types of questions in an interview:

- ✚ Close-ended questions,
- ✚ Open-ended questions, and
- ✚ Contingency questions

Close-ended questions offer the respondents a set of answers and ask them to choose the one that most closely represents their views.

Open-ended questions are not followed by any kind of specified choice, and respondents' answers are recoded in full.

The appropriateness of either close-ended or open-ended questions depends on a number of factors. Researcher Paul Lazarsfeld suggested that researchers use the following considerations to determine appropriateness

1. **The objective of the questionnaire:** close-ended questions are suitable when the researcher's objective is to lead the respondents to express agreement or disagreement with an explicit point of view, while open-ended questions are

likely to be more appropriate when the researcher wishes to learn how the respondent arrived at a particular point of view.

2. **The respondent's level of information about the topic in question:** open-ended questions provide opportunities for the interviewer to ascertain alike of information on the part of the respondent whereas close-ended questions do not.
3. **The extent to which the topic has been thought through by the respondents:** in situation where the respondents have not yet crystallized their opinions, open-ended question is preferable.
4. **The ease with which respondents can communicate the content of the answer or the extent to which respondents are motivated to communicate on the topic:** close-ended questions require less motivation to communicate on the part on the respondent.

Note that sometimes there may be good reasons for asking the same question in both open-ended and close-ended form.

Contingency questions are special case close-ended questions. A contingency question applies only to a subgroup of respondents. The investigator determines the relevance of the question to this subgroup by asking all respondents a preceding filter question. For example, in a news media survey, the filter question might read as, "Do you regularly follow the news in the paper?" The contingency question could then be "what recent event do you remember reading about? (Give a brief description)."

The relevance of the second question, from the example, on the respondent is contingent to his or her response to the *filter question*. Only those respondents who answered "yes" to the filter question will find the contingency question relevant. Therefore, the response categories of the filter question will be "1 Yes (answer the following question); 2. No (skip to question 3)." However, there are different formats for the contingency question. (Refer the following illustration)

Illustration

- Answer questions below if you are a senior planning to go to college next fall. Nonseniors skip to question 144.
 137. Did you take the college entrance exams?
 Yes
 No
 138. do you definitely know which college you will attend?
 Yes
 No
- Is this the first fulltime job you have had since you graduated from college?
 1. yes, _____
 2. no, _____

What happened to the job you had before - were you promoted, laid off, or what? (Check one).

 1. company folded

2. laid off or fired
3. job stopped; work was seasonal
4. quit voluntarily
5. promoted; relocated
6. other

Are you looking for another job at this time?

- Yes
 No
 don't know go to question 25.
 Inappropriate

Question Format

There are several formats for close-ended questions. However, the general format is to represent all possible answers and how the respondents choose the appropriate categories. The respondents can either circle or write the number of the answer or check a box or a blank, as shown here,

What is your marital status?

- | | | |
|-----------------------------------|---|---------------------|
| <input type="checkbox"/> Married | <input type="checkbox"/> Married | 1. Married |
| <input type="checkbox"/> Single | or <input type="checkbox"/> Single | or 2. Single |
| <input type="checkbox"/> Divorced | <input type="checkbox"/> Divorced | 3. Divorced |
| <input type="checkbox"/> Widowed | <input type="checkbox"/> Widowed | 4. Widowed |

However, circling a code number is preferable because the code number can easily be transformed to a computerized storage device.

Rating

Researcher uses a rating scale whenever they ask respondents to make a judgement in terms of sets of ordered categories such as “strongly agree,” “favourable,” or “very often.”

E.g. police should be allowed to conduct a full search of any motorist arrest for an offense such as speeding.

1. Agree strongly
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Disagree strongly

The response categories of such questions are termed *quantifiers*; they reflect the intensity of the particular judgement involved. The following sets of response categories are quite common.

- | | | |
|-------------------|----------------|---------|
| 1. Strongly agree | 1. Too little | 1. More |
| 2. Agree | 2. About right | 2. Same |
| 3. Depends | 3. Too much | 3. Less |
| 4. Disagree | | |

5. Disagree strongly

Matrix Questions

Matrix question is a method of organizing a large set of rating questions that have the same response categories. See the following example:

Indicate your reaction to each of the following statements

	I Strongly Agree	I agree	It depends	I disagree	I Strongly disagree
My vote gives me all the power I want in governmental affairs.	<input type="checkbox"/>				
If I complained to the people at a city agency, they would fix up whatever was wrong.	<input type="checkbox"/>				
I have sometimes wished that government officials paid more attention to what I thought.	<input type="checkbox"/>				

B Semantic Differential

Semantic differential is another type of rating scale. It measures the respondents' reaction to some object or concept by asking them to indicate a rating on a bipolar scale defined by contrasting adjectives at each end.

	Very	fairly	slightly	neither	slightly	fairly	very	
Good	---	---	---	---	---	---	---	Bad

For example:

Here is a list of pairs of words you might use to describe civil servants. Between each pair is a measuring stick of seven lines. Taking the first pair of words - i.e., "good/bad"- as an example, the line on the extreme left would mean he/she is fairly good, the next line would mean he/she is fairly good and so on. The words at the top of your card will help you choose the line you think is appropriate.

Now will you tell me which line you would use to describe civil servants?

	Very	fairly	slightly	neither	slightly	fairly	very	
<i>Good</i>	_____:	_____:	_____:	_____:	_____:	_____:	_____:	<i>Bad</i>
<i>Honest</i>	_____:	_____:	_____:	_____:	_____:	_____:	_____:	<i>Dishonest</i>
<i>Efficient</i>	_____:	_____:	_____:	_____:	_____:	_____:	_____:	<i>inefficient</i>
<i>Deep</i>	_____:	_____:	_____:	_____:	_____:	_____:	_____:	<i>shallow</i>
<i>Active</i>	_____:	_____:	_____:	_____:	_____:	_____:	_____:	<i>passive</i>

Ranking

Researchers use ranking whenever they want to obtain information regarding the degrees of importance or the priorities that people give to a set of attitudes or objects.

Example: “I would like you to tell me what you have found important in life. Please look at this card and tell me which of these is most important to you as a good in your life, which comes next in importance, which is third, and which ranks fourth.”

	Rank			
▪ A prosperous life (having a good income and being able to afford the good things in life).	1	2	3	4
▪ A family life (a life completely centered on my family).	1	2	3	4
▪ An important life (a life of achievement that brings me respect and recognition).	1	2	3	4
▪ A secure life (making certain that all basic needs and expenses are provided).	1	2	3	4

Ranking is useful device because it provides some sense of relative order among objects or judgements. With the use of ranking, we can at least obtain information regarding their relative order. As with rating scores, however, ranking doesn't provide any information about the distance between the ranks.

Researchers have found two general patterns of question sequence: *funnel sequence*, and *inverted funnel sequence*.

In a funnel sequence, each successive question is related to the previous question and has a progressively narrow scope. E.g.

1. What do you think are some of the most important problems facing Ethiopia?
2. Of all the problems you have just mentioned, which do you think the most important?
3. Where have you obtained most of your information about this problem?
4. Do you read the “Ethiopian Herald?”

Funnel sequence is important when the researcher wants detailed information.

In the inverted funnel sequence, narrower questions are followed by broader ones. E.g.

1. How many people were killed in the tornado?
2. How many do you suppose were injured so seriously that they had to go to the hospital?
3. How long it before most of the injured was got to the hospital?
4. Did you see anyone administer first aid by giving artificial respiration, or stopping bleeding? Who was it?
5. In general, how well do you think the first aid and the rescue operation were carried out?

Pitfalls in Questionnaire Construction

1. **Wording:** the question must be worded so that the respondent understands it.

2. **Response set:** it is a tendency to answer all questions in a specific direction regardless of their contents (is a special case has been given for questions structured by rating?)
3. **Leading questions:** a leading question is a phrased in such a manner that it seems to the respondent that the researcher expects a certain answer. E.g. “Would you say that you are not in favour of legal abortion?” The answer for this question will probably be *yes*.
4. **Threatening question (anxiety-arousing questions about):** e.g. “In the past year, how often did you become intoxicated while drinking any kind of beverage?”
5. **Double barreled questions:** double barreled questions combine two or more questions in a single question. E.g. “Domestic violence and HIV/AIDS are the most serious problems facing Ethiopia today.”
 - ___ Strongly agree
 - ___ Agree
 - ___ Depends
 - ___ Disagree
 - ___ Disagree strongly

SOME EXAMPLES OF TYPES OF SURVEY QUESTIONS

1. Specific Information Request

In which year did you start the degree course? _____

2. Category

Have you ever been or are you a student representative? (Tick which)

Yes (currently) Yes (in the past) Never

3. Multiple Choices

Do you view the money you have spent on your higher education as any of the following? If so, tick which.

A luxury An investment A necessity A gamble
A burden A right None of these

4. Scale

How would you describe your parent's attitude to higher education at the time you applied? Please tick one of the options below.

Very Positive Positive Mixed/Neutral Negative Very Negative Not Sure

5. Ranking

What do you see as the main purpose(s) of your degree study? Please rank all those relevant in order from 1 (most important) downwards:

Personal Development Career Advancement
Subject Interest Recreation

Fulfill Ambition Intellectual Stimulation
 Other (give details).....

6. Grid or Table

How would you rank the benefits of your degree study for each of the following? Please rank each item:

For	Very positive	Positive	Neutral	Negative	Very negative	Not sure
You						
Your family						
Your employer						
The country						
Your community						
Your friends						

7. Open Questions

Please summarise the benefits of your degree study in the space below:

SOME GENERAL RULES FOR DESIGNING QUESTIONNAIRES

(Source: Collis & Hussey, 2003)

1. Explain the purpose of the questionnaire to all participants.
2. Keep your questions as simple as possible.
3. Do not use jargon or specialist language (unless the recipients really prefer and understand it).
4. Phrase each question so that only one meaning is possible.
5. Avoid vague, descriptive words, such as 'large' and 'small'.
6. Avoid asking negative questions as these are easy to misinterpret.
7. Only ask one question at a time.
8. Include relevant questions only.
9. Include, if possible, questions which serve as cross-checks on the answers to other questions.
10. Avoid questions which require participants to perform calculations.

11. Avoid leading or value-laden questions which imply what there required answer might be.

Questions	Comments
-----------	----------

- 12. Avoid offensive questions or insensitive questions which could cause embarrassment.
- 13. Avoid asking ‘difficult’ questions, e.g. Where the respondent may struggle to answer (people hate to look stupid by not knowing the ‘answer’).
- 14. Keep your questionnaire as short as possible, but include all the questions you need to cover your purposes.
- 15. Avoid questions that contain some types of prestige bias (don’t ask questions which embarrass or force respondents into false answer).
- 16. Some issues may be very sensitive and you might be better asking an indirect question rather than a direct question.
- 17. Make sure that all possible answers are covered when you are constructing close-ended questions.
- 18. Start with easy to answer questions. Keep complex questions for the end.
- 19. Ask for personal information at the end.
- 20. Use a mix of question format.
- 21. Avoid double-barreled questions.
- 22. Avoid words with emotional connotations.
- 23. Use specific time frame when asking about behaviour.
- 24. Use specific place frame, e.g. *“In which country were you borne?”*

ASKING THE RIGHT QUESTIONS IN THE RIGHT WAY

1. <i>How satisfactory was your stay at the Carlton Hotel?</i>	A vague question and it would be better to offer a range of questions relating to specific aspects of the person's stay in the hotel.
2. <i>What is your place of residence?</i>	This question is capable of misinterpretation, as 'place of residence' might be seen as the road, town, county, etc.
3. <i>Some people say that the city is spending too much on building new schools. Do you agree or disagree?</i>	This question presents just one perspective on the topic. It would be better to include both perspectives, e.g. " <i>Some people say that the city is spending too much on building new schools, whilst others argue not enough is being spent? What is your view?</i> "
4. <i>How much time did you spend reading the newspaper yesterday?</i>	There is an assumption being made here that the person did or should have read a newspaper. Respondents faced with such a question may be tempted to make something up to save face.
5. <i>What is your religion?</i>	Again, this assumes the respondent has an affiliation to a particular religion. In this case it is better to offer respondents a choice of religious groups, plus options for atheists, agnostics and others.
6. <i>How old are you?</i>	This is a stark and abrupt way of asking this sensitive question and some respondents might take offence at it. It is better to either offer respondents a choice of boxes to tick with age cohorts, e.g. 30-39, or ask for a year of birth.
7. <i>Does your employer make adequate provision for maternity/paternity leave?</i>	The word adequate is vague and imprecise and may be based on a particular model of maternity/paternity leave arrangement known to the researcher, but not to the participant. It would be better to simply ask what provision the respondent's employer makes for maternity/paternity leave.

5.1.2. Cover Letter

After you have constructed the questionnaire, the next step is to write an introductory statement (for a personal or telephone interview) or a cover letter (for mail questionnaire) to explain the purpose of the survey to the respondents and to encourage a high response rate.

A cover letter must succeed in overcoming any resistance or prejudice the respondent may have against the survey. It should:

- ✓ identify the sponsoring organization or the persons conducting the study;
- ✓ explain the purpose of the study;
- ✓ tell why it is important that the respondent answer the questionnaire; and
- ✓ assure the respondent that the information provided will be held in strict confidence.

ILLUSTRATION 1

To program operators:

The ministry of education, department of women's affairs, in conjunction with the state manpower service council, has founded a special evaluation of public service employment projects, authorized under title V of the comprehensive employment and training act. This evaluation is being conducted by Dr. Bedilu Tesema in the institute for Social Research at Addis Ababa University. The purpose of the evaluation is to determine the impact of public service employment project on the communities in which they are conducted.

As you know, public service employment is the major part of the federal, state, and local strategy to overcome the problems of economically disadvantaged, unemployed people. There is no question that the program is needed throughout the country to create jobs and training opportunities for the larger number of people who remained unemployed. You are probably aware, however, that the public service employment programs are quite controversial and their future may be in jeopardy. Part of the reasons that these programs are so controversial is that no systematic evaluation of the benefits of these programs for the individuals employed and the communities served has been conducted.

Because this specific evaluation has significant national policy implication, I strongly urge you to assist the research team in compiling the necessary data. It is very important that you complete the survey questionnaire transmitted to you as soon as possible.

Thank You for Your Cooperation

Sincerely,

ILLUSTRATION 2

*Meseret Belachew, Director
Department of Women's Affairs*

Dear Friends:

We are doing a survey conducted by University of Gondar and assisted by Forum for Environment. Our purpose is to learn more about how people like you feel about certain aspect of environmental depletion and the subsequent health problems on the people. You have been selected at random to participate in this survey - thus your opinions will represent the opinions of thousands of people much like yourself.

Enclosed find a copy of our questionnaire. While it is a bit lengthy and will require about 20 minutes of complete, we hope that you will take the time to complete it and return the questionnaire to us in the enclosed self-addressed envelope.

A bit about confidentiality, we promise you that confidentiality under the academic ethics standards of Ethiopian Social Research Association. Your name will not be revealed or associated with your response nor will anyone outside of the project staff here at the University of Gondar be allowed to see your response. Thus, while Forum for Environment may be interested in the policy implications of our study, they will not be furnished with any information which in any way identifies you as an individual. Please note that the number in the upper-right-hand corner of the questionnaire. This number allows us to temporarily identify you. By referring to this number, we will know that you have responded to the questionnaire, and will not send to the follow-up mailing we will have send to nonrespondents.

We appreciate your willingness to help us in our research effort. If you would like a copy of our completed study, please indicate this on the last stage of the questionnaire. We will make certain that you receive a copy of our results. We believe that you will find the questionnaire both interesting and provocative and look forward to receiving your reply.

Sincerely Yours.

*Melaku Kebede
Assistant Professor*

*Zenith Alebachew
Associate Professor*

5.1.3. Instructions

Another important element researcher must take into account when constructing a questionnaire is instructions that go along with each question or with a set of questions. Instructions should be included with any questions that are not self-explanatory: the

instructions must range from very simple ones such as “circle the appropriate category” to more complex guidelines that explain how to set of priorities.

When an interviewer administers a questionnaire, the instructions are usually written for him/her and thus are often short and concise, instructing the interviewer what to do when the respondent provides a certain answer, when to probe for a more detail answer, or how to clarify a certain question. Please refer the following example of instructions written for an interviewer.

Who was employer on your last job? (Probe for correct category)

- | | |
|----------------------------------|--|
| <input type="checkbox"/> Private | <input type="checkbox"/> self-employed |
| <input type="checkbox"/> City | <input type="checkbox"/> public, nonprofit |
| <input type="checkbox"/> Country | <input type="checkbox"/> other _____ (specify) |
| <input type="checkbox"/> State | <input type="checkbox"/> doesn't know |
| <input type="checkbox"/> Federal | |

In the case of mailed questionnaire, where any question that is vague or unclear is likely to be answered incorrectly, the interviewer is absent. Therefore, providing clear instructions is extremely important. They can vary from general instructions introducing the questionnaire or its subsections to specific detail proceeding individual questions.

E.g.

Instructions: For each of the following questions, please mark the answer that comes closer to the way you feel about the issue. There are no right or wrong answers - please answer the questions as honestly as possible. Answer each of the questions in order of which it appears. If you wish to make additional comments on any of the specific questions or on the issues in general use the space at the end of the questionnaire. Your points are extremely important for understanding these complex civil liberty issues - we greatly appreciate your cooperation.

Instructions: Some people think that the government in A.A. should reduce the income differences between the rich and the poor, perhaps by raising the taxes of the wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income differences between the rich and the poor.

Here is a card with a scale from 1 to 7. Think of a score of 1 as meaning of that the government ought to reduce the income differences between the rich and the poor and 7 meaning that the government should not concern itself with reducing income difference. What score between 1 and 7 comes closest to the way you feel? (Circle one)

Finally, here is an example of a specific instruction for replying to a single question.
Above how many states that you lived in during your life? (Count only those

states that you lived in for at least one year).

5.2. Interview

Interview, based on the ways they are filled (responded) can be categorized into mail questionnaire, personal interview, and telephone interview.

5.2.1. Mail Interview

The questionnaire is an important survey method, under certain conditions and for a number of research purposes; an impersonal method of data collection can be useful.

Advantage

- 1. low cost:** It does not require a trained staff of interviewers; all it entails is the cost of planning, sampling, duplicating, mailing and providing stamped, self-addressed envelopes for the returns. Processing and analyzing are usually simpler and cheaper than for other survey methods. The cost effectiveness of administering a mail questionnaire is particularly evident when the population under study is widely spread over a large geographical area: reduces travel costs and large investment in time.
- 2. Reduction in biasing error:** it reduces biasing error that might result from the personal characteristics of the interviewers and variability in their skills: it avoids all that pitfalls encountered in personal interview.
- 3. Greater anonymity:** The absence of interviewer implies a greater anonymity for the respondent. This is helpful when the survey deals with sensitive issues such as sexual behaviours, child abuse, and so forth.
- 4. Considered answers and consultations:** mail questionnaires are also preferable when questions demand a considered (rather than an immediate) answer, or if answers require respondents to consult personal documents or other people.
- 5. Accessibility:** it permits wide geographic contact at minimum cost.

Disadvantages

- 1. Requires simple questions:** the responses are possible in mail questionnaire if and only if the questions are straight-forward enough to be comprehended solely on the basis of printed instructions and definitions.
- 2. No opportunity for probing:** all the answers have to be accepted as final.
- 3. No control over who fills out it:** researchers have control over the respondent's environment; hence they cannot be sure that the appropriate person completes the questionnaire.
- 4. Low response rate:** this is the most serious problem. It is often difficult to obtain an adequate response rate. The response rate is the percent of respondents in the sample who return completed questionnaire.

Do you think that mail questionnaire is applicable in Ethiopia? If not, why? If yes, how and where?

Some Factors Affecting the Response Rate of Mail Questionnaire

1. **Sponsorship:** sponsorship affects the response rate by convincing the respondent of the study's legitimacy and value as well as the perceived sanctions of the failure to reply. E.g. the US bureau of the census is successful in obtaining a response rate of nearly 95% on its national health interview survey because it is government sponsored which lends legitimacy and implies sanctions and health is an important issue to the general public.
2. **Inducement to respond:** researchers must appeal to the respondents and persuade them that they should participate by filling out the questionnaire and mailing them back through several methods, some of which includes:
 - ✚ to appeal to respondents' good will;
 - ✚ to tell them that the researcher needs their help; and
 - ✚ to offer the respondents a reward such as a prize or a "nominal sum of money".

Other inducements to respond include letters of support from professional associations and advertisements of the coming survey in publications of the professional associations.

To appeal to respondents' altruistic sentiments and to convince them of significance of the study is the most effective strategy.

3. **Questionnaire format and methods of mailing:** typography, color, and length, and type of cover letter (use high quality paper and adequate spacing). The use of usual colors is not recommended.
4. **Cover Letter:** it must succeed in convincing the respondents who fill out the questionnaire. Therefore, it should identify the sponsor of the study, explain its purpose, tell the respondents why it is important that they fill out the questionnaire, and assure them that the answers will be held in strict confidence. It must be between a formal and semi personal letter.
5. **Timing of mailing:** the timing of mailing has been shown to affect the response rate. For instance, because summer holidays produce the lowest response, it is not advisable to conduct the first wave of the mailing during those times.
6. **The Total Design Method (TDM):** this is a standardized set of step-by-step procedure that is divided into two parts: questionnaire construction and survey implementation.
7. **Selection of respondents:** this is largely determined by the nature of the study and the characteristics of respondents which are associated with a higher or lower response rate. Therefore, the researcher should involve in identifying these characteristics.

Techniques for increasing response rate

As a general rule, a response rate of 30 percent or greater for a postal/externally sent questionnaire is generally regarded as reasonable. However, a goal of 50 per cent or more responses should be attempted in any questionnaire that involved face-to-face interviews.

There are techniques that can help improve response rates to postal or electronic questionnaires:

- **Follow-up calls** (especially telephone reminders and special delivery letters).
 - **Pre-contact with respondents** (telling them about the questionnaire).
 - **Type of postage** (special delivery is superior to ordinary mail; there is also some evidence that hand-written white envelopes are more likely to be opened than brown/typed!)
 - **Rewards**: prizes, or better still, cash incentives.
 - **Personalizing the questionnaire**: writing to the person by name, e.g. ‘Dear John’ etc.
 - **Emphasizing Confidentiality**: ensuring that all views to be published remain anonymous, if appropriate
 - **Appeals to the respondent**: based on the social, personal or other benefits that might flow from the participation of a respondent
- Postal questionnaires should **always** include a stamped return envelope and have a covering letter explaining the purpose of the questionnaire and the use intended for the findings in the future.
 - The researcher should include full contact details and the offer to discuss the questionnaire with any respondent who has doubts or queries about it.
 - The researcher should always offer to share the research findings with any participant, if requested, and this offer is best made in the covering letter.

Rank of techniques for increasing response rate

techniques	Rank (high to low)	Optional conditions
Follow-up	1	<ul style="list-style-type: none"> ▪ more than one follow-up. ▪ telephone could be used to follow-up.
Inducement	2	<ul style="list-style-type: none"> ▪ questionnaires containing a token monetary reward produces better results than one without.
Sponsorship	3	<ul style="list-style-type: none"> ▪ people the respondents know produce the best result.
Introductory letter	4	<ul style="list-style-type: none"> ▪ an altruistic appeal seems to produce the best result.
Method of return	-	<ul style="list-style-type: none"> ▪ a regular stamped enveloped produces better results than a business reply envelope.
Format	-	<ul style="list-style-type: none"> ▪ aesthetically pleasing covers, a little that will arouse interest, and attractive page format.
Selection of Respondents	-	<ul style="list-style-type: none"> ▪ nonreaders and nonwriters are excluded from participation. ▪ interests in or familiarity with the topic under investigation is a major factor in determining the rate of return.

		<ul style="list-style-type: none">▪ the better educated are more likely to return the questionnaire.▪ professionals are more likely to return questionnaires.
--	--	--

Evaluating the Response Rate

What is an acceptable response rate for a mail questionnaire?

This question cannot be answered easily because scientists do not agree on a standard for a minimum response rate.

5.2.2. Personal Interview

A personal interview is a face-to-face interpersonal role situation in which an interviewer asks respondents questions designed to elicit answers pertinent to the researcher's hypotheses or research questions.

The questions, their wordings, and their sequence define the structure of the interview: *schedule structured focused and nondirective interviews.*

a. The Schedule Structured Interview

This is the least flexible personal interview form. Here, the number of questions and the wordings of the questions are identical for all of the respondents. Thus, interviewers should not reword the questions or provide explanations for the questions if the respondent asks for clarification. The sequence of asking is the same.

The schedule-structured interview is based on three basic assumptions:

1. For any research objectives, the respondents have a sufficiently common vocabulary so that it is possible to formulate questions which have the same meaning for each of them.
2. It is possible to phrase all the questions in a form that is equally meaningful to each respondent.
3. If the meaning of each question is to be identical for each respondent, its context must be identical, and since all preceding questions constitute part of the context, the sequence of questions must be identical.

(Please see the example of this type of interview given on the next page.)

Example: questionnaire for questioners

Dear questioners:

You are not doubt aware that the number of questionnaires calculated is rapidly increasing whereas the length of the working day has, at best, remained constant. In order to resolve the problem presented by this trend, I find it necessary to restrict my replies to questionnaire, to those questioners who first establish their bona fide (genuine opinion) by completing the following questionnaire.

1. *How many questionnaires, per annum, do you distribute? _____*
2. *How many questionnaires, per annum, do you receive? _____*
3. *What fraction of the questionnaires you received do you answer? _____*
4. *What fraction of the questionnaires you distribute are answered? _____*
5. *Do you think the ration of the fraction 3 : 4 should be greater than 1, less than 1, any other value? (please explain)*
6. *What fractions of your time (or effort) do you devote to:*
 - a) *Completing questionnaires? _____*
 - b) *Answering questionnaires? _____*
 - c) *Examining the replies to your own questionnaires? _____*
 - d) *Examining the replies to other people's questionnaires? _____*
 - e) *Drawing conclusions from questionnaires? _____*
 - f) *Other activities? _____*
7. *Do you regard the ratios of (a + b + c + d)/f as:*
 - a) *too small? _____*
 - b) *too large? _____*
 - c) *any other? _____ (check one only).*
8. *Do you ever distribute questionnaires exclusively to people who you know distribute questionnaires about questionnaires? _____*
9. *Do you expect answers to questionnaire from people who themselves distribute questionnaires about questionnaires? _____*
10. *Do you consider it would be of value of distributing a a questionnaire regarding answers to questionnaires to those individuals who receive questionnaire about the distribution of questionnaires?*

Yes _____

No _____

Any other answer? (Please explain)

Replies to this questionnaire must be signed. As you may surmise (guess), they are not suitable, nor will they be used for statistical purpose.

From Samuel Dellons

(Source: Frankfort, et. al, 1996: 233).

b. The Focused Interview

This is a nonscheduled form of personal interview. It has the following characteristics

1. It takes place with respondents known to have been involved in a particular experience.
2. It refers to situations that have been analyzed prior to the interview.
3. It precedes on the basis of an interview guide specifying topics related to the research hypothesis.
4. It is focused on the subjects' experience regarding the situation under study.

Although they encounter relationship between the interviewer and respondents is structured and the major aspects of the study are explained, respondents are given considerable liberty in expressing their definition of a situation that is presented to them

c. The Nondirective Interview

This is the most flexible form of all personal interview types. Here, the researcher does not employ a schedule to ask a pre-specified set of questions, nor are the question asked in a specified order. With little or no direction from the interviewer, respondents are encouraged to relate their experiences, to describe whatever events seem significant to them. (*Refer Frankfort, et. al, 1996:235-237*).

Advantages of Personal Interview

1. Flexibility,
2. Control of the interview situation,
3. High response rate, and
4. Collection of supplementary information including background information and spontaneous reactions.

Disadvantages

1. Higher cost,
2. Interviewer bias, and
3. Lack of anonymity.

5.2.3. Telephone Interviewing

Telephone interviewing is also called telephone survey. It can be characterized as a semipersonal method of collecting information. Today, it has become possible to draw a random sample of telephone numbers by the process called a Random Digit Dialing (RDD). Here, the researcher first identifies all working telephone exchanges in the targeted geographical area. Then create a potential telephone number by randomly selecting an exchange and then appending a random number between 0001 and 9999. Additional numbers are created by repeating these two steps. Nonresidential and nonworking telephones are excluded during the interview process.

Advantages

1. moderate cost,
2. fast (speedy),

3. high response rate, and
4. high quality data.

Disadvantages

1. reluctance to discuss sensitive topics;
2. the “broken of” interview – they can terminate before it is completed,
3. less information – no supplement information will be given

5.2.4 Comparing the Three Types of Interviews

<i>Criticism</i>	<i>Personal interview</i>	<i>Mail interview</i>	<i>Telephone interview</i>
Cost	high	low	Moderate
Response rate	high	low	High
Control of interview situation	high	low	Moderate
Applicability to geographically dispersed population	moderate	high	Moderate
Collection of detailed information	high	low	High
Speed	low	low	High

5.2.5. Structures of Interview

Interviews can be grouped into three main types:

- 1. Structured**
- 2. Semi-structured**
- 3. Unstructured**

a) Structured Interviews

Structured interviews involve the use of questionnaires based on a predetermined and identical set of questions. The questions are usually read out by a researcher in a neutral tone of voice to avoid influencing or prompting a particular response from a participant. (

b) Semi-Structured Interviews

The interviewer will have a list of themes and areas to be covered and there may be some standardized questions, but the interviewer may omit or add to some of these questions or areas, depending on the situation and the flow of the conversation.

c) Unstructured Interviews

These are informal discussions where the interviewer wants to explore in-depth a particular topic with another person in a spontaneous way. However, even in unstructured interviews it is likely that the researcher would have a pre-decided range of topics to cover in the discussion

5.2.6. Principles of Interviewing

1. Getting the respondents to cooperate and to provide the desired information through the following three factors:

- a) Respondents must feel that interaction with the interviewer will be pleasant and satisfactory.
 - b) The respondents need to see the study as being worthwhile.
 - c) Barriers to the interview in the respondents mind need to be overcome employing the following techniques;
 - + Tell the respondents who you are and who you represent.
 - + Tell the respondents what you are doing in a way that will stimulate his/her interest.
 - + Tell the respondents how he/she was chosen.
 - + Adapt your approach to the situation.
 - + Try to create a relationship of confidence and understanding (rapport between yourself and the respondent is very important).
2. After initial introduction begin the interview using the following techniques:
- a) the questionnaire should be followed but it can be used informally,
 - b) the interview should be conducted in the informal and flexed atmosphere, and the interviewer should avoid creating the impression that what is occurring is a cross-examination or a quiz,
 - c) the questions should be asked exactly as worded in the questionnaire,
 - d) read each questions slowly – two words per second,
 - e) questions should be presented in the same order as in the questionnaire,
 - f) ask every question specified in the questionnaire, and
 - g) questions that are misinterpreted or misunderstood should be repeated and clarified.

Probing

Probing is the technique used by the interviewer to stimulate discussion and obtain more information. A question has been asked and an answer given. But, for several reasons, the answer may be inadequate and requires the interviewer to seek more information to meet the survey objectives. Thus, probing is the act of getting additional information during the interview process.

Probing has two major functions:

1. motivating respondents to elaborate on or clarify an answer.
2. help focus the conversation on the specific topic of the interview.

NB. Probing is more common in less structured interviews.