

UNIT ONE

THE NATURE OF RESEARCH

1.1 The Meaning and Characteristics of Research

People get excited about the topic of research. A number of scholars have tried to understand and define the concept of research differently. As a result, we can find different definitions given to the concept of research in different scholarly works- journals, books, etc. In one or more of the following phrases:

- a systematic and scientific search for pertinent information on a specific topic;
- the application of the scientific method in the study of problems;
- a Voyage of discovery or a search for new knowledge;
- the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory in the practice of an art, etc.

Since research undergoes all the way from simple facts diggings to the most profound speculations, it is difficult to give it one generally accepted definition. However, somewhat more comprehensive definition of research is forwarded by Lokesh koul. According to Kaoul (1984:10), the term “research “is defined as,

a systematic attempt to obtain answers to meaningful questions about phenomena or events through the application of scientific procedures. It is an objective, impartial, empirical and logical analysis and recording of controlled observations that may lead to the development of generalizations, principles, theories, resulting in to some extent in prediction and control of events that may consequences or causes of specific phenomena.

The above definition ascertains the fact that a research is the search for knowledge through objective and systematic method of finding solution to a problem. It is a scientific endeavor that seeks to integrate and systematize its findings. It is concerned with the objective verification of generalizations based on logical analyses of problems with the help of appropriate methodologies

According to Best (1977:9) research has the following basic characteristics:

1. Research is directed towards the solution of a problem. It may attempt to answer a question or to determine the relation between two or more variables.
2. Research emphasizes the development of generalizations, principles, or theories that will be helpful in predicting future occurrences. Research usually goes beyond the specific objects, groups or situations investigated and infers characteristics of a target population from the sample observed. Research is more than information retrieval, the simple gathering of information
3. Research is based upon observable experiences or empirical evidence. Certain interesting questions do not lend themselves to research procedures because they cannot be observed. Research rejects revelation and dogma as methods of establishing knowledge and accepts only what can be verified by observation.
4. Research demands accurate observation and description. The researcher uses quantitative, numerical measuring devices, the most precise means of description. The researcher selects or devises valid data gathering instruments or procedures and employs appropriate mechanical, electronic, or psychometric devices to refine human observation, recording, computation, and analysis of data.
5. Research involves gathering new data primary or first-hand sources or using existing data for a new purpose. Teachers frequently assign a so-called research project that involves writing a paper dealing with the life of a prominent person. The students are expected to read a number of encyclopedias, books, or periodical references, and synthesize the information in a written report. This is not research, for the data are not new. Merely recognizing or restating what is already known and has already been written, valuable as it may be as a learning experience, is not research. It adds nothing to what is known.
6. Although research activity may at times be somewhat random and unsystematic, it is more often characterized by carefully designed procedures, always applying rigorous analysis. Although trial and error are often involved, research is rarely a blind, shotgun investigation—trying something to see what happens.
7. Research requires expertise. The researcher knows what is already known about the problem and how others have investigated it. He has searched the related literature carefully. He is also thoroughly grounded in the terminology, the concepts, and the technical skill necessary to understand and analyse the data that he gathers.

8. Research strives to be objective and logical, applying every possible test to validate the procedures employed, the data collected, and the conclusions reached. The researcher attempts to eliminate personal bias. There is no attempt to persuade or to prove an emotionally held conviction. The emphasis is on testing rather than on proving the hypothesis. Although absolute objectivity is as elusive as pure righteousness, the researcher tries to suppress
9. Research is characterized by patient and unhurried activity. It is rarely spectacular and the researcher must accept disappointment and discouragement as he pursues the answers to difficult questions.
10. Research is carefully recorded and reported. Each important term is defined, limiting factors are recognized. Procedures are objectively recorded, and conclusions are presented with scholarly cautions and restraint. The written report and accompanying data are made available to the scrutiny of associates or other scholars. Any competent scholar will have the information necessary to analyze, evaluate, and even replicate the study.

Critical look into the above characteristics of research entails that the knowledge gained through research is of highest order. It is not based on assumptions, beliefs, and untested generalizations. To seek such knowledge research must develop scholarship, accurate observation, integrity willingness to spend long hours to collect and study all forms of evidence before arriving at conclusions scholarship and ability to recognize causal relationships, and originality and objectivity in thinking.

1.2. Objectives of Research

The main objective of research is to discover answers to questions through the application of scientific procedures. In particular, research is conducted to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose, we may think of research objectives as falling into either of the following broad groupings:

1. To gain familiarity with a phenomenon or to achieve new insights into it (studies with object in view are termed as exploratory or formulate research studies),

2. To portray accurately the characteristics of a particular individual, situation or a group (studies with this object in view are known as descriptive research studies),
3. To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies);
4. To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis- testing research studies).

Besides, research is intended to equip the researcher with the following scholarly experiences:

- i. Awareness of the importance of properly choosing and limiting a subject for research.
- ii. Self-reliance in using a college library or other libraries.
- iii. Experience in evaluating source materials.
- iv. Training in careful reading and purposeful note taking.
- v. Discipline in the inductive method of organizing data.
- vi. Practice in composing and documenting relatively long paper.

1.3. Motivation in Research

What makes people to undertake research? People are motivated to conduct researches for a number of reasons. According to Kothari (1990: 2), the possible motives for doing research may emanate from one or more of the following:

1. Desire to get a research degree along with its consequential benefits;
2. Desire to face the challenge in solving the unsolved problems; i.e. concern over practical problems initiates research;
3. Desire to get intellectual joy of doing some creative work;
4. Desire to be of service to society;
5. Desire to get respectability.

Furthermore, a number of other factors may initiate people to go for research writing. These may include government directives or policies employment conditions, curiosity about new things desire to understand causal relationships, social thinking and awakening.

1.4. Types of Research

Different authorities classify research differently. The classification of research is based on the objectives or a purpose the researches intends to accomplish. A hard look into various scholarly works (Bailey 1982, Kothari 1990) reveals the existence of the following classification:

1. Applied Vs Pure Research. Research can be roughly classified as applied (or action) or pure (or fundamentals or basic).

Applied research is research with findings that can be applied research is research with findings that can be applied to solve social problems of immediate concern. Applied research seeks to find a solution for an immediate problem facing a society or an industrial / business organization. Applied research covers a wide range of social science areas, including education, busing to achieve racial integration, drug addition and use, alcoholism crime and delinquency, women in the labor force, and problems of the aged. Applied research also deals with problems partially in the area of social science, including the energy crisis and air, water and noise pollution.

On the other hand, and, pure research is manly concerned with generalizations and with the formulation of the theory. It involves developing and testing theories and hypotheses that are intellectually interesting to the investigator and might thus have some social application in the future, but have no application to social problems in the present timer. Research concerning some natural phenomenon or relating to pure mathematics are examples of pure or basic research.

Similarly, research studies, concerning human behavior carried with a view to make generalizations about human behavior, are also examples of. Fundamental research, but research aimed at certain conclusions (say, a solution) facing a concrete social or business problem is an example of applied research. In this regard, an example given by Turney and Robb (1971:7) would make the distinction between pure and applied research more vivid.

If a researcher were to conduct a study using white rats to determine the effect of positive versus negative reinforcement on learning to run a maze successfully, he would be conducting basic research. If he rewarded one group of rats with food pellets for correct turns in maze, but gave an

electric shock to the group of rats making incorrect turns, he could then determine which group mastered the maze in a shorter period of time. Even though this information has no immediate application to motivation, it might be useful in the building of a theory concerning motivation and learning. Whereas food and electrical shock might be impractical to use in classroom, the research could conduct an experiment using praise and criticism as motivational factors in human learning. This type of experiment would be directed towards the solution of a practical problem and, thus, would be classified as applied research.

Furthermore research to identify social economic or political trends that may affect a particular institution or the copy research (research to find out whether certain communications will be read and understood) of the marketing will be read and understood) or the marketing research or evaluation research are examples of applied research. Thus, the central aim of applied research is to discover a solution for some pressing practical problem, whereas basic research is directed towards finding information that has a broad base of application and thus, add to the already existing organized body of scientific knowledge.

2. Descriptive Vs Analytical Research. Some scholars classify research as descriptive and analytical.

Descriptive research includes surveys and fact- finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. In descriptive research, the researcher has no control over the variables, he or she can only report what has happened or what is happening most ex-post facto research projects, designed in the fields of social science and business are based on descriptive research studies. For instance, if a researcher intends to measure the frequency of shopping, preference of people to discover causes or together similar data, then he/she is applying descriptive research. Descriptive research utilizes survey methods of all kinds, including comparative and correctional methods.

On the other hand, in analytical research, the researcher uses facts or information already available, and analyzes these to make a critical evaluation of the material.

3. Quantitative Vs Qualitative Research. Some authorities divide research into quantitative and qualitative.

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be, expressed terms of quantity.

Qualitative research, on the other hand, is concerned with qualitative phenomenon- phenomenon relating to or involving quality or kind. For example studies related to human behavior fall into this category of research.

Qualitative research aims at discovering the underlying motives and desires by applying the techniques that include focus group interviews, in depth interviews, word association tests, sentence completion tests, story completion tests and similar other projective techniques. Attitude or opinion research i.e., research designed to find out how people feel or what they think about a particular subject or institution is also qualitative research. It is to be noted that qualitative research generates results either in non-quantitative form or in the form which are not subject to rigorous quantitative analysis.

4. Conceptual Vs Empirical Research. Research can also be divided into conceptual and empirical. Which conceptual research relies on some abstract ideas or theory, empirical research relies on experience or observation. Conceptual research is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones. On the other hand, empirical research is generally used by investigators who are interested in coming up with conclusions which are capable of being verified by observation or experiment. It is data- base research and sometimes called as “experimental ” research. In such research it is necessary to get at facts firsthand, at their source and actively to go about doing certain things to stimulate the production of desired information. In such research, the researcher must provide himself with a working hypothesis or guess as to the probable results. He / she then works to get enough facts (data) to prove or disprove his hypothesis. Empirical research is appropriate when proof is sought that certain variables affect other variables in some way.

5. Some other Types of Research. All other types of research are variations of one or more of the above types, based on either the purpose of research, or the time required to accomplish research, or the environment in which research is done, or on the basis of some other similar factor.

- From the point of view of time, we can think of research either as one time research or longitudinal research. In the former case, the research is confined to a single-time period, whereas in the latter case the research is carried on over several time periods.
- Research can be field-setting research or laboratory research or simulation research, depending upon the environment in which it is to be carried out.
- Research can be as well be understood as clinical or diagnostic research. Such research follow case -study methods or in depth approaches to reach the basic causal relations. Such studies usually go deep into the causes of things or events that interest us, using very small samples and very deep probing data gather devices.
- Historical research is a type of descriptive research that attempts to establish facts through meaningful and organized record of events so as to derive conclusions concerning past events. The purpose of historical research is to find connections between events in the past and variables in the present by means of critical review of evidences. It aims at constructing the past events systematically and objectively by collecting, evaluating, verifying, and synthesizing evidences and establishing facts and reach defensible conclusions in relation to the present and the future.
- Research can also be classified as conclusion-oriented and decision-oriented. In conclusion-oriented research, the researcher has a freedom to pick up a problem and to redesign the esquire as he/she proceeds and to conceptualize it as he/she wishes. In decision-oriented research, however, the researcher is not free to embark upon research according to his /her inclination as it is geared towards decision-making process. Operations research is an example of decision-oriented research since it is a scientific method of providing executive departments with a quantitative basis for decisions regarding operations under their control.
- Tracer study (follow-up study). It is a type of explanatory study that aims at investigating the subsequent development of individual or unit after a specified treatment or condition. Tracer study is used to establish patterns of change in the past so as to predict future patterns or conditions by analyzing data collected about subjects and environment.

For example, a researcher can conduct a tracer study concerning the outputs (Former graduates) of Addis Ababa commercial college. This will help him/her to investigate or understand

- Whether all of its graduates are employed or not;
- Whether there is a mismatch between the training the graduates received and the type of jobs they are handling;
- Whether there is a need for changes in the college's curricula, programs, training methods, and training facilities, to mention some of them only.

1.5. Differences Underlying in Research Techniques, Research Methods, and Research Methodology

1.5.1. Research Methods Vs. Research Techniques.

Authorities have tried differentiating between research methods and research techniques. In this regard, Kothari (1990:9) has succinctly put their difference as follows:

- Research techniques. Refer to the behavior and instruments we use in performing research operations such as making observations, recording data, techniques of processing data and the like.
- Research methods. Refer to the behavior and instruments used in selecting and constructing research technique. For instance, the difference between methods and techniques of data collection can better be understood from the details given in the following chart:

Type	Methods	Techniques
1. Library Research	(i) Analysis of historical records	Recording of notes, Content analysis, Tape and Film listening and analysis.
	(ii) Analysis of documents	Statistical compilations and manipulations, reference and abstract guides, content analysis
2 Field Research	(i) Non participant direct observation	Observational behavioral scales, use of score cards, etc.
	(ii) Participant Observation	Interactional recording, possible use of tape recorders, photographic techniques.
	(iii) Mass observation	Recording mass behavior, interview using independent observers in public places.
	(iv) Mail questionnaire	Identification of social and economic background or respondents.
	(v) Opinion questionnaire	Use of attitude scales, projective techniques, use of sociometric scales.
	(vi) personal interview	Interviewer uses a detailed schedule with open and closed questions.
	(vii) Focused interview	Interviewer focus attention upon a given experience and its effects.
	(viii) Group interview	Small groups of respondents are interviewed simultaneously.
	(ix) Telephone	Used as a survey technique for information and for discerning opinion; may also be used as a follow up of questionnaire.
	(x) Case study and life history	Cross sectional collection of data for intensive analysis, longitudinal collection of data of intensive character.
3. Laboratory Research	Small group study of random behavior play and role analysis	Use of audio-visual recording devices use of observers, etc.

From what has been stated above, we can say that methods are more general. It is methods that generate techniques. However, in practice, the two terms are taken as interchangeable and when we talk research methods we to, by implication, include research techniques within their compass.

1.5.2 Research Methods Vs. Research Methodology.

There is a clear-cut demarcation between research methods and research methodology. Research methods, as it has been stated earlier refer to all those methods that are used for conduction of

research. Thus, research methods are concerned with the methods the researcher use in performing research operations. Keeping research at center of solving a given problem, research methods can be put into the following three groups:

1. Those methods which are concerned with collection of data;
2. Those statistical techniques which are used for establishing relationships between the data and unknowns;
3. Those methods which are used to evaluate the accuracy of the results obtained.

Research methods falling in groups stated under 2 & 3 are generally taken as the analytical tools of research.

On the other hand, research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. Researcher not only need to know how to develop certain indices or instruments; how to calculate measures of central tendency, dispersion or association; how to apply particular research techniques; but they also need to know which of these methods or techniques, are relevant and which are not, and what would they mean and indicate, and why. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his/her methodology for his/her problem carefully as the same may differ from problem to problem.

Thus, the scope of research methodology is wider than that of research methods. Of course, research methods do constitute a part of the research methodology. To sum up, when we talk of research methodology we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that the research results are capable of being evaluated either by the researcher himself or by others.

Furthermore, the following questions are usually answered by carefully designed research methodology:

- Why a research study has been undertaken?

- How was the research problem defined?
- In what way and how was the hypothesis formulated?
- What data have been collected and what particular method has been adopted?
- Why particular technique of analyzing data has been used? And a host of similar other questions.

Significance of Knowing Research Methodology

In view of kothari (1990:13), knowing how research is done or the methodology of research has the following significance:

1. For one who is preparing himself for a career of carrying out research, the importance of knowing research methodology and research techniques is obvious since the same constitute the tool of his trade. The knowledge of methodology provides good training especially to the new researcher and enables him to do better research. It helps him to develop discipline thinking or a 'bent of mind' to observe the field objectively. Hence, those aspiring for careerism in research must develop the skill of using research techniques and must thoroughly understand the logic behind them.
2. Knowledge of how to do research will inculcate the ability to evaluate and use research results with reasonable confidence. In other words, we can state that the knowledge of research methodology is helpful in various fields such as government or business administration, community development and social work where persons are increasingly called upon to evaluate and use research results for action.
3. When one knows how research is done, then one may have the satisfaction of acquiring a new intellectual tool which can become a way of looking at the world and of judging every day experience. Accordingly, it enables us to make intelligent decision concerning problems facing us in practical life at different points of time. Thus, the knowledge of research methodology provides tools to look at things in life objectively.
4. In this scientific age, all of us are in many ways consumers of research results and we can use them intelligently provided we are able to judge the adequacy of the methods by which they

have been obtained. The knowledge of methodology helps the consumer of research results to evaluate them and enables him/her to take rational decisions.

1.5.2. The Research Process

The process of conducting a research involves a series of interrelated steps. Although the formulation of the steps varies from author to author, the following steps appear to be necessary to effectively carry out research. These stages are as follows:

1. Formulating the research problem;
2. Extensive literature survey (or review);
3. Formulating a working hypothesis;
4. Preparing the research design;
5. Determining the sample design;
6. Gathering the data;
7. Analysis of data;
8. Hypothesis - testing;
9. Generalization and interpretation;
10. Preparation of the report or the thesis.

Each of these stages is dependent upon others. In other words, the stages of the research overlap continuously rather than following a strictly prescribed sequence. At times, the first step determines the nature of the last step to be undertaken. The chart given below illustrates the interdependency among the stages of the research process.

The details of uses basic stages will be discussed in subsequent units of the manuscript.

1.6. Criteria of a Good Research

Any scientific research is expected to satisfy the following criteria (For, 1958 as cited in kathati, 1990:25):

1. The purpose of the research should be clearly defined and common concepts be used.
2. The research procedure used should be described in sufficient detail to permit another researcher to repeat the research for further advancement, keeping the continuity of what has already been attained.
3. The procedural design of the research should be carefully planned to yield results that are as objective as possible.
4. The researcher should report with complete frankness, flaws in procedural design and estimate their effects upon the findings.
5. The analysis of data should be sufficiently adequate to reveal its significance and the method of analysis used should be appropriate. The validity and reliability of data should be checked carefully.
6. Conclusions should be confined to those justified by the data of the research and limited to those for which the data provide an adequate basis.
7. Greater confidence in research is warranted if the researcher is experienced, has a good reputation in research and is a person of integrity.

Summarizing the above stated criteria of a scientific research leads to derivation of the qualities of good research as follows.

- (i) Good research is systematic. It means that research is structured with specified steps to be undertaken in a specified sequence in accordance with the well defined set of rules. Systematic characteristic of the research does not rule out creative thinking but it certainly does reject the use of guessing and intuition in arriving at conclusions.
- (ii) Good research is logical. This implies that research is guided by the rules of logical reasoning and the logical process of induction and deduction are of great value in carrying out research.

- Induction is the process of reasoning from a part to the whole whereas deduction is the process of reasoning from some premise to a conclusion which follows from that very premise.
- (iii) Good research is empirical. It implies that research is related basically to one more aspects of a real situation and deals with concrete data that provides a basis for external validity to research results.
- (iv) Good research is replicable. This characteristic allows research results to be verified by replicating the study and thereby building a sound for decisions.

UNIT TWO

THE RESEARCH PROBLEM AND PREPARATION OF THE RESEARCH PROPOSAL

2.1 *The Meaning of a Research Problem*

The focal point of every research activity is a research problem. Research starts with a felt difficulty. It takes place when there is a problematic situation and a need to solve the problem. Thus, a researcher must find the problem and formulate it so that it becomes susceptible to research. But what is a research problem? According to Kotari (1990:30), a research problem refers to some difficulty which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same. Often we say that a research problem does exist if the following conditions are met with:

1. There must be an individual or a group which has some difficulty or the problem.
2. There must be some objective(s) to be attained at. If one wants nothing, one cannot have a problem.
3. There must be an alternative means (or the course of action) for obtaining the objective(s) one wishes to attain. This means that there must be at least two means available to a researcher for if he has no choice of means, he cannot have a problem.
4. There must remain some doubt in the mind of a researcher with regard to the selection of alternatives. This means that research must answer the question concerning the relative efficiency of the possible alternatives.
5. There must be some environment (s) to which the difficulty pertains.

These are usually called as the basic components of a research problem. These components of a research problem entail that the research problem requires a researcher to find out the best solution for the given problem, i.e., to find out by which course of action the objective can be attained optimally in the context of a given environment.

2.2. Selecting the problem

In the research process, the first and for most steps is the choice of a suitable problem for investigation. The identification of a research problem is an important phase of the entire research process. Therefore, a considerable care must be taken while selecting a research problem. It requires a great deal of time, energy, and logical thinking on the part of the researcher. Practically speaking, several factors deter the selection of suitable problems by the researchers, especially for the beginners. These include, limited knowledge of the research process, unfamiliarity with the areas in which the research is needed, or lack of readiness for problem selection, to mention only some.

There are, however, some important sources, which are helpful to a researcher for selecting a problem. These include the following:

1. **Professional Experience**, One of the most fruitful sources of problems for beginning researcher are his/her own experiences as a professional in a given field. The day-to-day observation of the incidences in the working place and out of the working environment, which include the experiences of his/her colleagues, their attitudes, home environment, socio-economic status, and motivational level provide rich sources of the problem.
2. **Contact and Discussion with People** Contact and discussions with research- oriented people in conferences, seminars or public lectures serve as important sources of problem. Moreover, active membership in organizations which are concerned with the improvement of a given field usually brings into close contact with crucial problems and issues concerning the field.
3. **Inference from theory** A research problem can derived from a critical look into various sociological theories. In other words, application of some general principles involved in various theories to specific situation makes an important starting point for research. For example, learning theories, personality theories, theories of intelligence, theories of motivation, sociological theories and many others make an excellent starting point for

research in classroom situations. In light of this, an empirical research will help to determine whether a particular theory can be translated into actual practice in the classroom situation.

4. **Professional Literature** Consultation of research reports, bibliographies of books and articles, periodicals, research abstracts, year books, dictionaries and research guides constitutes an invaluable source of a research problem in a given field. The study of professional literature will not only expose a research to pressing research problems but will suggest the way in which research is conducted.
5. **Technological and Social Changes** Technological and social changes, directly or indirectly, exert an influence in the function of an organization. All such changes bring about new problems for research. For instance, changes may affect policy issues in which case they may arouse interest in investigating new policies among the policy analysts or other concerned personalities. In general, the researcher has to make every effort to come up with suitable research problem.

Moreover, the following points as stated by *Kothari (1990:32-33)*, may be observed by a researcher in selecting a research problem or a subject for research:

1. Subject which is overdone should not be normally chosen, for it will be a difficult task to throw any new light in such a case.
2. Controversial subject should not become the choice of an average researcher.
3. Too narrow or too vague problems should be avoided.
4. The subject selected for research should be familiar and feasible so that the related research material or sources of research are within one's reach.
5. The importance of the subject, the qualifications and the training of researcher, the costs involved, and the time factor are few other criteria that must also be considered in

selecting a problem. In other words, before the final selection of problem is done, a researcher must ask himself or herself the following questions:

- a) Whether he/she is well equipped in terms of his/ her background to carry out the research?
- b) Whether the study falls within the budget he/she can afford?
- c) Whether the necessary cooperation can be obtained from those who must participate in research as subjects?

If the answers to all these questions are in the affirmative, one may become sure so far as the practicability of the study is concerned.

6. The selection of a problem must be preceded by a preliminary study. Particularly when the field of inquiry is relatively new and does not have available a set of well developed techniques, a brief feasibility study must always be undertaken.

To sum up, the research problem undertaken for study must be carefully selected. The subject or the problem selected must involve the researcher and must have an upper most place in his/her mind so that he/she may undertake all pains needed for the study.

2.3 Definition and Statement of the Problem

Following selection of the problem, there is a need for defining the research problem clearly. In this regard, there is a proverbial statement that captures everybody's attention that 'A problem clearly stated is a problem half solved.' This statement signifies the necessity of defining the problems to be investigated in unambiguous fashion. But when do we say that the problem is unambiguously stated? According to *Whiteny (1964:80-81)* "To define a problem means to put a fence round it, to separate it by careful distinctions from like questions found in related situations of need." In other words, defining a problem involves the task of laying down boundaries within which a researcher shall study the problem with a predetermined objective in view. This statement emphasizes that a research problem needs to be specified explicitly and needs to be

narrowed down to the workable size. A proper definition of the research problem will enable the researcher to be on the right track whereas an ill-defined problems may create hurdles.

The following rules were forwarded by *Hillway (1964:117)* so as to serve as the prerequisites for the definition of a problem:

1. Be sure that the topic chosen is neither too vague nor too broad in scope. Also be sure that the problem is not specified too narrowly in such a way that it becomes insignificant and trivial.
2. To make the problem clearer and more understandable, state it as question, which requires a definite answer.
3. Carefully state the limits of the problem, eliminating all aspects and factors, which will not be considered in the study.
4. Define any special terms that must be used in the statement of the problem.

According to *Koul (1996:62)*, the formal definition of the problem involves description of the background of the study, its theoretical basis and underlying assumptions, and statement of the problem in specific, concrete and workable questions.

A good statement of a problem must clarify what is to be determined or solved. It must restrict the scope of the study to specific and workable research questions. The most important step in this direction is to specify the variables involved in the questions and define them in operational terms.

An example given by *Koul (1996:62-63)* would give some insight into the definition and statement of a research problem in such a way that it is amenable for investigation.

A researcher states that he is interested in studying the effectiveness of programmed instruction on the performance in Mathematics of high school students. This statement is broad and it

communicates in a general way what the researcher wants to do. However, it is needed to specify the problem with much greater clarity if the researcher is to find a method to arrive at the right type of conclusions.

The first step is to specify the variables involved in the problem and define them in operational terms. The variables involved in the problem are "effectiveness", "programmed instruction", "Performance" and "high school students." It should be noted that the definitions of variables may not necessarily reflect the dictionary meanings. The operational definitions of variables help to narrow the scope of a general question to specific measurable and observable variables.

Technique Involved in Defining the Problem

The task of defining a research problem is very crucial endeavor as it is believed to lie a solid foundation for smooth running of a research operation. Therefore, definition of a research requires a thorough thought and it must not be accomplished hurriedly. However, in practice this is frequently overlooked which causes a lot of hurdles later on. According to *Kothari (1990:34-35)*, the technique of defining a problem involves the undertaking of the following steps:

1. Statement of the problem in a general way from what has been perceived or experienced by the researcher.
2. Understanding the origin and nature of the problem clearly. The best way of understanding the problem is to discuss it with those who first raised it in order to find out how the problem originally came about and with what objectives in view.
3. Surveying and examining the available literature related to the problem thoroughly. This helps to know what data and other materials, if any, are available for operational purposes and to narrow the problem as well as the technique that might be used.
4. Developing the ideas through discussions with colleagues and other experienced personalities. This is quite often known as an experience survey. Discussions with such people help the researcher:

- sharpen his/her focus of attention on specific aspects within the field;
 - develop clear impression about the general approach to the given problem and techniques used for the research operation;
 - predict possible solutions for the problem; etc.
5. Rephrasing the research problem into analytical or operational proposition. At this stage, the researcher is required to put the problem in as specific terms as possible so that it may become operationally viable and may help in the development of working hypotheses.

In addition to what has been stated above, the following points must also be noted while defining a research problem:

- a) Technical terms and words or phrases, with special meanings used in the statement of the problem, should be clearly defined.
- b) Basic assumptions or postulates (if any) relating to the research problem should be clearly stated.
- c) A straight forward statement of the value of the investigation (i.e., the criteria for the selection of the problem) should be provided.
- d) The suitability of the time-period and the sources of data available must also be considered by the researcher in defining the problem.
- e) The scope of the investigation or the limits within which the problem is to be studied must be mentioned explicitly in defining a research problem.

To illustrate the application of the above stated points, the following example has been extracted from *Kothari (1990:36-37)*.

Let us suppose that a research problem in a broad general way is as follow:

" Why is productivity in Japan so much higher than in India?"

In this form, the question has a number of ambiguities such as:

- What sort of productivity is being referred to?

- With what industries the same is related?
- With what period of time the productivity is being talked about?

In view of all such ambiguities the given statement or the question is much too general to be amenable to analysis. Rethinking and discussions about the problem again and again may result in narrowing it down to be better manageable for research as follows:

- To what extent did labour productivity from 1971 to 1980 in Japan exceed that of India in respect of 15 selected manufacturing industries?
- What factors were responsible for the productivity differentials between the two countries by industries? etc.

With this sort of formulation, the various terms involved such as “labour productivity”, “productivity differentials”, etc. must be explained clearly. The researcher must also see that the necessary data are available. In case the data for one or more industries selected are not available for the concerning time period, then the said industry or industries will have to be substituted by other industry or industries. The suitability of the time-period must also be examined. Thus, all relevant factors must be considered by a researcher before finally defining a research problem.

2.4. Evaluation of the Problem

Before the final decision is passed on the investigation of the problem, the feasibility of the problem has to be tested in terms of personal suitability of the researcher and social value of the problem. In short, the research problem should be evaluated in terms of the following criteria.

1. Is the problem Researchable?

Some problems cannot be effectively solved through the process of research. Particularly, research cannot provide answers to philosophical and ethical questions that do not show the relationship existing between two or more variable vividly. Therefore, the problem must be stated in workable research questions that can be answered empirically.

2. **Is the problem New?**

As far as possible, the research problem needs to be new. One should not target his/her investigation on the problem that had already been thoroughly investigated by other researchers. To be safe from such duplication, the researcher has to go through the records of previous studies in a given field. However, there are times where by a problem which has been investigated in the past could be worthy of study. A researcher may repeat a study when he/she wants to verify its conclusions or to extend the validity of its findings in a situation entirely different from the previous one.

3. **Is the problem significant?**

The question of significance of the problem usually relates to what a researcher hopes to accomplish in a particular study. What is his/her purpose in undertaking to solve the particular problem he/she has chosen? What new knowledge does he hope to add to the sum total of what is known? And what value is this knowledge likely to have? When all these questions are answered clearly by the researcher, the problem should be considered for investigation.

The researcher should show that the study is likely to fill in the gaps in the existing knowledge, to help resolve some of the inconsistencies in previous research, or to help in the reinterpretation of the known facts. The findings should become a basis for theory, generalizations or principles and should lead to new problems for further research.

4. **Is the problem feasible for the particular researcher?**

In addition to the above-stipulated points, the feasibility of the research problem should also be examined from the point of view of the researcher's personal aspects as stated hereunder:

a) **Research competence:** The problem should be in an area in which the researcher is qualified and competent. Before indulging into investigation of the problem, the

researcher has to make sure that he/she is well acquainted with the existing theories, concepts and laws related to the problem. He/ She must also possess the necessary skills and competencies that may be needed to develop, administer, and interpret the necessary data-gathering tools. What is more, he/she needs to consider whether he has the necessary knowledge of research design and statistical procedure that may be required to carry out the research through its completion.

b) Interest and enthusiasm: The researcher has to make sure that the Problem really interests him/ her. He/ She must also be truly enthusiastic about the problem. If the problem is chosen properly by observing these points, the research will not be a boring drudgery, rather it will be love's labour.

c) Financial Considerations: Research is an expensive endeavors which requires a great deal of money to invest. In this regard, the researcher should ascertain whether he/ she has the necessary financial resources to carry on the investigation of the selected problem. An estimate of the expenditure involved in data-gathering equipment, printing, test materials, travel, and clerical assistance needs to be specified. Furthermore, the possible sources of fund must be consulted ahead of time.

d) Time requirements: Research should be undertaken within a given scope of time, which was allocated with careful analysis of the prevailing situations. Each and every activity of a research process requires time. Particularly, it is worthwhile to plan for the time that will be needed for the development and administration of tools, processing and analysis of data, and writing of the research report. While allocating time for a research project, care should be taken for the researcher's other engagements or commitments, the respondents' accessibility, the expiry date of the required data, etc.

e) Administrative considerations: The researcher has to pay to all administrative matters that are necessary to bring his/her study to its full completion. In this regard, the researcher should consider the kinds of data, equipment, specialized personnel, and administrative facilities that are needed to complete the study successfully. The researcher must assure whether the pertinent data are available and accessible to him/ her.

2.5 The Hypotheses

Once the selection and definition of the problem have been accomplished, the derivation of working hypotheses is the most important step in the research process.

2.5.1 What is hypothesis?

According to *Bailey/1982:41*), the term hypothesis is defined as " a proposition that is stated in testable form and predicts a particular relationship between two (or more) variables." Similarly, *Webster's(1968)* defines hypothesis as " attentive assumption made in order to draw out and test its logical or empirical consequences.... Hypothesis implies insufficiency of presently attainable evidence and therefore a tentative explanation."

The above definitions ascertain the fact that a hypothesis is a tentative explanation for which the evidence necessary for testing is at least potentially available. By *test* we mean either to confirm it to our satisfaction or to prove it wrong. The task of research is to test and establish such a hypothesis (or hypotheses). It is also worthwhile noting at this juncture that all statements of wishfull thinking, merely opinions, value judgments or normative do not represent hypotheses. Instead, hypotheses are statements of fact susceptible to empirical investigation. They are a set of suggested tentative solutions of explanations of a research problem, which may or may not be the real solutions.

For example, the statement that ' Every person should attend religious worship services at least once a week, is a normative statement which cannot be proved through research. It is a statement of what ought to be, not a factual statement that can be shown through investigation to be right or wrong.

But the statement that

‘60 percent or more of the residents of Addis Ababa attend worship services at least once a week,’ is a statement of purported fact and can therefore be tested. This statement could be taken as a hypothesis.

A statement, which is a value judgement, will not be considered as a good hypothesis

E.g. Economics is a more important subject than Management.

Similarly, a statement for which empirical evidence could not be obtained would not be suitable.

An example of this might be:

Mathematics students in the twentieth century would score much higher in computer science examinations than would mathematics students of the nineteenth century.

A research question, which presupposes the result would also not be appropriate, an example is:

I wish to show that my new reading curriculum is much better than the old one we used to use.

Therefore, the foregoing examples entail that research hypotheses need to be value- neutral and be capable of being proven right or wrong on the basis of empirical evidence.

To add another example, suppose a researcher plans to conduct research on the following topic:

Factors that contribute to Lower Achievement of Female Students than males in ESLCE in Tigray Region.

To search for the prevailing factors that affect the performance of females more adversely than the performance of males, the researcher may suggest the following hypotheses:

1. Female students receive significantly less support to their education than that of their male counterparts.
2. Female students sustain significantly higher sex role stereotypes in textbooks than do their male counterparts.

It should be noted that these hypotheses are taken as tentative solutions to the problem with the understanding that the investigation in due course may lead either to their retention or rejection.

2.5.2 Derivation of Hypotheses

The inspiration for hypotheses comes from a number of sources which include the following:

1. **Experience**: The daily life experiences or the day-to-day observation of the correlation (relationship) between various phenomena leads the researcher to hypothesize a relationship and to conduct a study to see if his/her suspicions are confirmed.
2. **Past research or Common beliefs**: Hypotheses can also be inspired by tracing past research or by commonly held lay beliefs. For example, a number of studies in America have shown that college freshmen are more politically conservative than college seniors, suggesting a correlation between year in school and political belief. Such hypothesis could be used either to replicate the past studies or to extend the test of a familiar hypothesis to a sample of persons with different characteristics (E.g College students in other country).
3. **Through direct analysis of data or deduction from existing theory**. Hypotheses may also be generated through direct analysis of data in the field or may be deduced from a formal theory. Through attentive reading, the researcher may be able to get acquainted with relevant theories, principles and facts that may alert him/her to identify valid hypotheses for his/her study.

2.5.3 Importance of Hypothesis

A well-grounded hypothesis provides the following advantages:

1. Represents specific objectives, which determine the nature of the data needed to test the propositions.
2. Offers basis for selecting the sample, the research procedures, and the statistical analysis needed.
3. Keeps the study restricted in scope thereby preventing it from becoming too broad.
4. Sets a framework for reporting the conclusion of the study.

2.5.4 **Criteria of Usable Hypotheses**

Hypotheses can be useful if and only if they are carefully formulated. Traverse (1978: 76-78) has forwarded seven criteria for good hypotheses. These include the following:

1. Hypotheses should be clearly and precisely stated.
2. Hypotheses should be formulated in such a way that they can be tested or verified. They should be testable.
3. Hypotheses should state explicitly the expected relationship between variables.
4. Hypotheses should be limited in scope. Hypotheses of global significance are not usable as they are not specific and simple for testing and drawing conclusions.
5. Hypotheses should be consistent with most known facts. In other words, hypotheses should be grounded in the well established facts, theories or laws.
6. Hypotheses should be stated as far as possible in simple terms. The simplicity of the statements helps to gain the following:
 - to become easily understandable to others (readers),
 - to become easily testable,
 - to provide a basis for a clear and easily comprehended report at the completion of the study.
7. The Hypotheses selected should be amenable to testing within a reasonable time.

2.5.5 **Forms of Stating Hypothesis**

The statement of a research hypothesis can take either declarative (positive) form, negative form, the null form, or the question form. The following examples are aimed at illustrating each of these cases:

Positive form:

- H₁- The academic achievement of extroverts is significantly higher than that of introverts.
- H₂- Students who learn in small class size will perform significantly better in Mathematics test than who learn in large class size.

H₃- Teaching Children through programmed instructional material will decrease their test anxiety.

Negative form:

H₁- The academic achievement of extroverts is not significantly higher than that of introverts.

H₂- Students who learn in small class size will not perform significantly better in mathematics test than those who learn in large class size.

H₃- Similarly stated.

Null Form:

H₁ - There is no significant difference between the academic achievement of extroverts and introverts.

H₂ - There is no significant difference between students who learn in small class size and those in large class size in performing in mathematics test.

H₃ - Teaching children through programmed instruction material will have no effect on their test anxiety.

Question form:

H₁ - Will the academic achievement of extroverts be higher than that of introverts?

H₃ - Will teaching children through programmed instruction decrease their test anxiety?

In general, when a researcher makes a positive statement about the outcome of the study, the hypothesis takes the declarative form. When the researcher negates about the outcome

of the study, the hypothesis takes the negative form. When the researcher makes a statement that no relationship exists, the hypothesis takes the null form. In the question form hypothesis, a question is asked as to what the outcome will be instead of stating what outcome is expected.

It should also be noted that a working proposition stated either in declarative, negative, null or interrogative form is a matter of preference by the researcher. However, some authorities (like Koul, 1988), recommend the use of the declarative forms as they appear to be more powerful for obtaining valid information than others.

In closing, it is important for the researcher to formulate hypotheses before data are gathered. This is necessary for an objective and unbiased study.

2.6 The Research Proposal or synopsis

After the selection of a research problem and setting proper direction for investigation, the researcher should write out a proposal, synopsis, or plan for research.

2.6.1 What is the Research proposal?

According to Koul (1988:76), the research proposal is a systematic plan, which brings to focus the preliminary planning that will be needed to accomplish the purpose of the proposed study. It is just like a blueprint, which the architect prepares before the construction of building starts. More specifically, the research proposal has the following importance:

- ♦ It serves as a basis for determining the feasibility of the project.
- ♦ It provides a systematic plan of procedure for the researcher to follow.
- ♦ It gives the research supervisor a basis for guiding the researcher while conducting the study.
- ♦ It reduces the probability of costly mistakes.

Preparation of a full fledged proposal is not a one-time endeavor. But is the result of continuous modification and amendment through discussions with experts in the field.

2.6.2 **Components of the Research Proposal**

There are certain elements that appear as very essential to good research, which need to be reflected in the preparation of the research proposal. These include the following:

1. **The Title** The title of the research should be worded in such a way that it gives sufficient information about the nature of study. In selecting a title for investigation, the researcher should consider the following:

(a) The title should not be too lengthy or too involved. It should be specific to the area of study. It should be noted that the proposed study cannot completely be presented in the title.

For instance, the following topics appear to be too long:

- A study of the Academic Achievement of Children in Pastoral Regions whose parents had Participated Literacy Classes Against those whose parents did not.
- Comparison of Academic Achievement Among Grade Eight Children who have Attended Pre-School Education and Those who did not.

(b) The title should not be too brief or too short. For instance, the following titles appear to be too vague to convey the required meaning.

- Marketing in Japan
- Leadership in Sudan
- Unemployment in Ethiopia

(c) The title should not be burdened by pompous words and should not include terms of unscientific; rhetorical, argumentative, emotional, or biased nature. The language in the title should be professional in nature but not pedantic.

2. **Statement of the problem** Statement of the problem elaborates about the problem. It attempts to focus on a clear goal. More specifically, statement of the problem is targeted towards the following:

- stating the background facts, which justify the study to be in order:
- developing hypotheses or key research questions, which may show the direction of the whole exercise

3. **Review of Related Literature**

The theoretical and empirical framework from which the problem arises must be briefly described. A brief resume of related studies found in journals, magazines, abstracts and reports should be made. This provides evidence that the researcher is familiar with what is already known and also with what is unknown or unproved. It also helps to avoid the risk of duplication of what has been done and to serve as a basis for formulating hypotheses.

4. **Significance of the study**

While preparing the research proposal, the researcher has to incorporate the justification for the need of the research. He/she should justify the importance and urgency of the study; as to how the results of his/her study will be useful to the beneficiaries. The following are some of the points in which the justification stresses:

- a) A wide time gap between the earlier study and the present one. The need for new knowledge, techniques or conditions will necessitate for replicating the study.
- b) Existence of knowledge gaps that were uncovered by the previous studies. Former studies might have investigated only some aspects of the issue, or was treated in breadth than depth. Therefore, the need for the current study could be to help address those areas that remain untouched or inadequately treated.

- c) Lack /Shortage of information about a problem. In some instances information in the area may be missing or scant. Therefore, the present study may be useful in shading new light on the problem or in filling the gap in the knowledge pertaining to the given area.
5. **Definition of Terms or Concepts** The technical terms or words and phrases having special meanings need to be defined operationally by the help of special dictionaries.
6. **Delimitations of the Study** Boundaries of the study should be made clear with reference to:
- (a) the scope of the study by specifying the areas to which the conclusions will be confined, and
 - (b) the procedural treatment including the sampling procedures, the techniques of data collection and analysis, the development of measuring tools and their use in the study.
7. **Limitations of the study** although a researcher tries his best to design his research as properly as possible, there are externals (uncontrollable) variables that confront his investigation and affect his conclusion. In his proposal, the researcher has to specify such mitigating factors that hinder the attainment his objectives fully. Such anticipated restrictions are referred as limitations of the study. The possible sources of the limitations of the study include:
- (a) Practical weaknesses in the methodologies the researcher adapted.
 - (b) Lack of access to the right data.
 - (c) Poor choice/development/ delivery of instruments
 - (d) Sampling restriction
 - (e) Lack of up-to-date literature in the areas
 - (f) Usual time borne situation in the study site

8. **Procedures for collecting Data**

In this section, the details about sampling procedure and the data collecting tools are described.

(a) **Sampling**

In the research process, the researcher often comes across unmanageable size of population in which case he/she may be compelled to draw representative sample by using different sampling techniques. A research proposal should clearly indicate the population from which the researcher will draw his/her sample, and describe the procedure he/she will use to select the sample.

(See the details of it in unit 5)

(b) **Tools**

In order to gather evidence or data for the study, the researcher has developed appropriate and reliable instrument(s). The researcher must be well versed in the use of these tools or instruments and fully aware of their merits and demerits.

The research proposal should explain the reasons for selecting a particular tool (s) for collecting data.

(See the details of it in Unit 6)

9. **Methods of Data Analysis**

In this section, the researcher describes how to organize, analyse , and interpret data. The details of the statistical techniques and the rationales for using such techniques should be described in the research proposal.

10. **Bibliography**

This is a section where a list of books, journals and other documents is offered. The researcher should list all reference materials that he has used in selecting the problem and which he may use during the conduct of study.

11. **Time Schedule**

The researcher should also prepare a realistic time schedule for completing the study within the time available. Dividing a study into phases and assigning dates for the completion of each phase help the researcher to use his time systematically.

12. **Budget Schedule**

The research proposals which are submitted to governmental or non-governmental organizations for financial assistance should also include a budget schedule. This is a financial breakdown that helps to estimate the cost of the study.

CHAPTER THREE

REVIEW OF THE RELATED LITERATURE

Chapter Objectives

In completion of the Chapter, the students should be able to:

- comprehend the common concepts of review of related literature,
- describe the principal characteristics of the related literature,
- explain the propose and functions of related literature,
- explain why the need for critical reading for research,
- demonstrate how to record the related review literature in a bibliography and in the text of the research.

3.1. DEFINITIONS AND CONCEPT OF RELATED REVIEW LITERATURE

One of the essential preliminary tasks when you undertake a research study is to go through the existing literature and studies in order to acquaint yourself with the available body of knowledge in your area of interest. The literature review is an integral part of the research process and makes a valuable contribution to almost every operational step.

A literature review is a critical and in depth evaluation of previous research. It is a summary and synopsis of a particular area of research, allowing anybody reading the paper to establish why you are pursuing this particular research program. A good literature review expands upon the reasons behind selecting a particular research question.

According to Calderon and Gonzales (1993:35), related literature is composed of discussions of facts and principles to which the present study is related. For instance, if the present study deals with drug addiction, literature to be reviewed or surveyed should be composed of materials that deal with drug addiction. These materials are usually printed and found in books, encyclopedias, professional journals, magazines, newspapers and other publication.

It has value even before the *first step*; that is, when you are merely thinking about a research question that you may want to find answers to through your research journey. In the initial stages of research it helps you to establish the theoretical roots of your study, clarifying your ideas and developed your research methodology.

Later in the process, the literature serves to enhance and consolidate your own base and helps you to integrate your findings with the existing body of knowledge. Since an important responsibility in research is to compare your findings with those of others, it is here that the literature review plays an extremely important role. During the write-up of your report it helps you to integrate your finding with existing knowledge – that is, to either support or contradict earlier research. The higher the academic level of your research, the more important a thorough integration of your findings with existing literature become.

It is recommended that you should avoid the extraneous details of the literature by doing a brief review of the information, not a comprehensive report. Emphasize the important results and conclusion of the other studies, the relevant data and trends from previous research, and particular methods of designs that could be duplicated or should be avoided. Discuss how the literature applies to the study you are proposing; show the weakness or faults in the design, discussing how you would avoid similar problems. Close the literature section by summarizing the important aspects of the literature and interpreting them in terms of your problem.

The review of the literature gives readers the context for the present study. The review should not merely summarize a series of books and articles; rather, it should call attention to the most important previous work, the place of your study in relation to other research, and delineate areas of agreement and disagreement in the field. The review should evaluate and interpret existing research rather than simply repeat it. Organizing the review literature by topic rather than by author and avoid unnecessary direct quotation can help you the review of research.

In the research undertaking, your own research problem is always central. Everything that you do, you do because it aids and assists you in attacking your problem. And when you know what others have done, you are better prepared to attack with deeper insight and more complete knowledge the problem you have chosen to investigate.

3.2. IMPORTANCE, PURPOSE, AND FUNCTION OF RELATED LITERATURE.

A survey of review related literature is very important because such reviewed literature serve as a foundation of the purpose of the study. This is because related literature guides the researcher in pursuing his research avenue.

According to Kumar (2001:32), a literature review has the following functions:

- It provides a theoretical background to your study.
- It helps you establish the link between what you are proposing to examine and what has already been studied.
- It enables you to show how your findings have contributed to the existing body of knowledge in your profession. It helps you to integrate your research findings into the existing body of knowledge.

In relation to your own study, the literature review can help in four ways. It can:

- 1) Bring clarity and focus to your research problem;
- 2) Improve your research methodology;
- 3) Broaden your knowledge base in your research areas; and
- 4) Contextualize your findings.

1) *Bring clarity and focus to your research problem*

When reviewing the literature you learn what aspects of your subject area have been examined by others, what they have found out about these aspects, what gaps they have identified and what suggestions they have made for further research. All these will help you gain a greater insight into your own research questions and provide you with clarity and focus which are central to a relevant and valid study. In addition, it will help your to focus your study on areas where there are gaps in the existing body of knowledge, thereby enhancing its relevance.

2) *Improving your research methodology*

Going through the literature acquaints you with the methodologies that have been used by others to find answers to research questions similar to the one you are investigating. A literature review tells you if others have used procedures and methods similar to the ones that you are proposing, which procedures and methods have worked well for them and what problems they have faced with them. By becoming aware of any problems and pitfalls, you will be better positioned to select a methodology that is capable of providing valid answers to your research question. This will increase your confidence in the methodology you plan to use and will equip you to define its use.

3) Broadening your knowledge base in your research areas

The most important function of literature review is to ensure you read widely around the subject area in which you intend to conduct your research study. It is important that you know what other researchers have found in regard to the same or similar questions, what theories have been put forward and what gaps exist in the relevant body of knowledge. When you undertake a research project for a higher degree (e.g. an MA or a PhD) you are expected to be an expert in your area of research. A thorough literature review is that it helps you to understand how the findings of your study fit into the existing body of knowledge (Martin 1985:30)

4) Enabling you to conceptualize your findings.

Obtaining answers to your research questions is comparatively easy: the difficult part is examining how your findings fit into the existing body of knowledge. How do answer to your reaserch compare with what others have found? What contribution have you been able to make to the existing body of knowledge? How your findings are different forms those of others? Undertaking a literature review will enable you to compare your findings with those of others and answer these questions. It is important to place your findings in the context of what is already known in your field of enquiry.

3.3. CHARACTERISTICS OF RELATED LITERATURE AND STUDIES

There are certain characteristics of related materials that make them of true value. Among these characteristics are:

1. *The survey materials must be as recent as possible.* This is important because of the rapid social, economic, scientific, and technological changes. Findings several years ago may be of little value today because of the fast changing life style of the people.
2. *Materials reviewed must be objective and unbiased.* Some materials are extremely or subtly one-sided, either political, or religious, etc. comparison with these materials cannot be made logically and validly.
3. *Materials surveyed must be relevant to the study.* Only materials that have some bearing or similarity to the researcher problem at hand should be reviewed.
4. *Surveyed materials must have been based upon genuinely original and true facts or data to make them valid and reliable.*
5. *Review materials must not be too few nor too many.* They must only be sufficient enough to give insight into the research problem or to indicate the nature of the present investigation.

3.4. CONDUCTING A LITERATURE REVIEW

Evaluating the credibility of sources is one of the most difficult aspects, especially with the ease of finding information on the internet. The only real way to evaluate is through experience, but there are a few tricks for evaluating information quickly, yet accurately.

There is such a thing as ‘too much information,’ and Google does not distinguish or judge the quality of results, only how search engine friendly a paper is. This is why it is still good practice to begin research in an academic library. Any journals found there can be regarded as safe and credible.

The next stage is to use the internet, and this is where the difficulties start. It is very difficult to judge the credibility of an online paper. The main thing is to structure the internet research as if it were on paper. Bookmark papers, which may be relevant, in one folder and make another subfolder for a ‘shortlist.’

- The easiest way is to scan the work, using the abstract and introduction as guides. This helps to eliminate the non-relevant work and also some of the lower quality research.

If it sets off alarm bells, there may be something wrong, and the paper is probably of a low quality. Be very careful not to fall into the trap of rejecting research just because it conflicts with your hypothesis. Failure to do this will completely invalidate the literature review and potentially undermine the research project. Any research that may be relevant should be moved to the shortlist folder.

- The next stage is to critically evaluate the paper and decide if the research is sufficient quality. Think about it this way: The temptation is to try to include as many sources as possible, because it is easy to fall into the trap of thinking that a long bibliography equates to a good paper. A smaller number of quality sources is far preferable than a long list of irrelevance.
- Check into the credentials of any source upon which you rely heavily for the literature review. The reputation of the University or organization is a factor, as is the experience of the researcher. If their name keeps cropping up, and they have written many papers, the source is usually OK.
- Look for agreements. Good research should have been replicated by other independent researchers, with similar results, showing that the information is usually fairly safe to use.

The process of reviewing the related literature comprise, among other things, ***active reading, careful record keeping, selective note-taking, and critical evaluation*** of the information. The sections that follow are aimed at explaining these concepts in greater details.

3.4.1. Active Reading

Any research activity requires the researcher(s) to be involved in a significant amount of reading. Reading for research could take place in three stages of the research project. These include the following:

1. ***At the beginning of your research*** , the purposes of which are:
 - to check what other research has been done,
 - to focus your ideas, and
 - to explore the context for your project;
2. ***During your research***, the purposes of which are:
 - to keep you interested and up to date with developments,

- to help you better understand the methods you are using and the field you are researching, and
- to serve as a source of data;

3. ***After Your research.*** Whose specific purposes are:

- to see what impact your own work has had, and
- to help you develop ideas for further research projects.

According to *Blaxter Hugues and Tight (1996: 104- 105)*, the phrases critical reading, critical thinking and critical assessment refer to a considered and justified examination of what others have written or said regarding the subject in question.

Therefore, as you read each source, you have to evaluate the material based on the following criteria:

1. The relevance of the work to your topic and starting question.
2. The timeliness or recency of the work.
3. The author of the work (based on all available information)
4. The prestige or nature of the journal (scholarly or popular press).
5. The controversial nature of the source (whether it agrees with or contradicts other sources). As you encounter new sources, you will be the best judge of whether or not a particular source contains information for your research project. Record your evaluative comments in your research notebook.

3.4.2. Recording Your Reading

As a researcher, you have to be meticulous right from the beginning of your research project up to the end and even beyond your project. This will save you time and trouble in the long run.

This is particularly important when it comes to recording your reading. Finding information in the first place can be hard enough. Finding it again some time after wards can be even harder unless your methods of recording and filing are thorough and systematic. Therefore, you should resolve right from start to note down full details of every thing you read. These details should include:

- the author or authors;
- the title of the paper, report or book;
- the date of publication;
- if it is a book or report, the publisher and place of publication;
- if it is a chapter in an edited book, the title and editor of the book, and the page numbers of the chapter;
- if it is a paper in a journal, the title of the journal, volume and issue number, and pages.

There are a number of ways in which you might collect and store this information. These include notebooks, loose sheets of paper and note cards (index cards). The following section is devoted to explain about the card index.

➤ ***The Card Index***

A card index is a collection of lined cards of various sizes (e.g. 5"x3", 6"x4", or 8"x5"), which is meant to keep review notes and reference information. For convenience and standard 4x6 inch card is usually a preferable size. Such size provides a sufficient space for notes while at the same time being handy to be kept in a pocket or purse. Where your financial position fails to allow you secure standard cards, you can prepare similar cards out of locally available, hard papers. You are, however, strongly advised to avoid the habit of taking notes on a piece of paper of different sizes because such a habit makes your work inefficient and time consuming.

Box 1: Sample card index

Bryman, A.

No.1

Research Methods and organizations studies

London, Routledge,1989.

What to put on your index cards.

The cards should include all the information you are likely to need for inter-library loan applications and for drawing up the references or bibliography for your project report. They may include brief notes about the content of book or article and reminders that a certain chapter or page had useful information about some topic. They will be your stock-in-trade and you should start building up your stock as soon as you begin your studies. The following boxes offer some examples of what your index cards might look like and what they can contain.

Author(s) _____ No _____

- Title of the book / article _____
- Date of publication _____
- Place of publication _____
- Volume number _____
- Page number _____
- Publisher _____
- Edition number _____
- Issue number _____

Box 2: Examples of using index cards.

Kemmis, S.

Action Research
In Keeves, J. (ed.), Educational Research,
Methodology and Measurement: An International
Handbook, Oxford, Pergamon, 1988, pp.42-9

A basic introduction to the nature and use of the research
approach in education.

Francis, J.

"Supervision and Examination of Higher Degree Students"
Bulletin of the University of London, 1976, 31, pp.3-6

Includes discussion of the idea of originality in postgraduate
research projects.

It should be noted that it is best to make only one point on each card and to use only one side of the card. You will then have maximum flexibility in sorting out the cards at the writing stage.

3.5.1. Styles of Referencing

Preferred styles of referencing differ both between universities and between departments within universities. Even styles that are in wide use such as 'Harvard' vary in how they are used in practice by different institutions. When this is combined with the reality that some lecturers apply an adopted style strictly, whilst others are more lenient, it emphasizes the need for you to use the precise style prescribed in your assessment criteria. Within business and management, two referencing styles predominate, the Harvard style and the American Psychological Association (APA) style, both of which are author-date systems. The alternative, numeric systems are used far less widely.

Four points are important when referencing:

- Credit must be given when quoting or citing other's work.
- Adequate information must be provided in the reference to enable that work to be located.
- References must be consistent and complete.
- References must be recorded using precisely the style required by your university.

AUTHOR-DATE SYSTEMS

1) THE HARVARD STYLE

- ***Referencing in the text***

The Harvard style is an author-date system. It appears to have its origins in a referencing practice developed by a professor of anatomy at Harvard University (Neville 2007) and usually uses the author's name and year of publication to identify cited documents within the text. All references are listed alphabetically at the end of the text. Common variations within the Harvard style which are applied consistently include (Neville 2007):

- Name(s) of authors or organizations may or may not be in UPPER CASE.
- Where there are more than two authors, the names of the second and subsequent authors may or may not be replaced by et al. in italics.
- The year of publication may or may not be enclosed in (brackets).
- The title of the publication may be in italics or may be underlined.

The style for referencing work in the text is outlined in the following pages (***Table A1.1.***)

- ***Referencing in the references or bibliography***

In the references or bibliography the publications are listed alphabetically by author's name, and all authors' surnames and initials are normally listed in full. If there is more than one work by the same author, these are listed chronologically. The style for referencing work in the references or bibliography is outlined in ***Table A1.2.*** While it would be impossible for us to include an example of every type of reference you might need to include, the information contained in this table should enable you to work out the required format for all your references.

Table A1.1 Using the Harvard style to reference in the text

To refer to	Use the general format	For example
A single author	(Surname year)	(Saunders 2007)
Dual authors	(Surname and Surname year)	(Saunders and Thornhill 2006)
More than two authors	(Surname <i>et al.</i> year)	(Lewis <i>et al.</i> 2004)
Work by different authors generally	(Surname year, Surname year) in alphabetical order	(Cassell 2004, Dillman 2000, Robson 2002)
Different authors with the same surname	(Surname Initial year)	(Smith J 2008)
Different works by the same author	(Surname year, year) in ascending year order	(Saunders 2004, 2005)
Different works by the same author from the same year	(Surname year letter), make sure the letter is consistent throughout	(de Vita 2006a)
An author referred to by another author where the original has not been read (<i>secondary reference</i>)	(Surname year, cited by Surname year)	(Granovetter 1974, cited by Saunders 1993)
A corporate author	(Corporate name year)	(Harley-Davidson Inc. 2008)
A newspaper article with no obvious author	(Newspaper name year)	(The Guardian 2008)
Another type of work with no obvious author	(Publication title year)	(Labour Market Trends 2005)
An Internet site	(Source organisation year)	(Financial Times 2008)
A television or radio programme	(Television or radio programme series title year)	(Today Programme 2008)
A commercial DVD or video that is part of a series	(DVD or video series title year)	(The Office Series 1 and 2 2005)
A commercial DVD or video that is not part of a series	(DVD or video title year)	(One Flew Over the Cuckoo's Nest 2002)
A work for which the year of publication cannot be identified	(Surname or Corporate name nd), where 'nd' means no year (Surname or Corporate name c. year) where 'c.' means circa	(Woollons nd) (Hattersley c. 2004)
A direct quotation	(Surname or Corporate name, year, p. ###) where 'p.' means 'page' and ### is the page in the original publication on which the quotation appears	'Whenever an employee's job ceases to exist it is potentially fair to dismiss that person.' (Lewis <i>et al.</i> 2003, p. 350)

Table A1.2 Using the Harvard style to reference in the references or bibliography

To reference		Use the general format	For example
Books, chapters in books and brochures	Book (first edition)	Surname, Initials. and Surname, Initials. (year). <i>Title</i> . Place of publication: Publisher.	Berman Brown, R. and Saunders, M. (2008). <i>Dealing with statistics: What you need to know</i> . Maidenhead: Open University Press.
	Book (other than first edition)	Surname, Initials. and Surname, Initials. (year). <i>Title</i> . (# edn) Place of publication: Publisher.	Morris, C. (2003). <i>Quantitative approaches to business studies</i> . (6 th edn). London: Financial Times Pitman Publishing.
	Book (no obvious author)	Corporate name or Publication name. (year). <i>Title</i> . Place of publication: Publisher.	Mintel Marketing Intelligence. (1998). <i>Designerwear: Mintel marketing intelligence report</i> . London: Mintel International Group Ltd.
	Chapter in a book	Surname, Initials. and Surname, Initials. (year). <i>Title</i> . Place of publication: Publisher. Chapter #.	Robson, C. (2002). <i>Real World Research</i> . (2 nd edn). Oxford: Blackwell. Chapter 3.
	Chapter in an edited book containing a collection of articles (sometimes called a reader)	Surname, Initials. (year). Chapter title. In Initials. Surname and Initials. Surname (eds) <i>Title</i> . Place of publication: Publisher. pp. ###-###.	King, N. (2004). Using templates in the thematic analysis of text. In C. Cassell and J. Symon (eds) <i>Essential guide to qualitative methods in organizational research</i> . London: Sage. pp. 256–270.
	Dictionary and other reference books where is an author or editor and referring to particular entry	Surname, Initials. (year). <i>Title</i> . (# edn). Place of Publication: Publisher. pp. ###-###.	Vogt, W.P. (2005). <i>Dictionary of statistics and methodology: a nontechnical guide for the social sciences</i> . (3 rd edn). Thousand Oaks, CA: Sage. pp. 124–5.
	Dictionary and other reference books where no author or editor and referring to particular entry	<i>Title</i> . (year). (# edn). Place of Publication: Publisher. pp. ###-###.	<i>The right word at the right time</i> . (1985). Pleasantville, NY: Readers Digest Association. pp. 563–4.
	Brochure	Corporate name or Publication name. (year). <i>Title</i> . Place of publication: as for author.	Harley-Davidson Europe. (2007). <i>2008 make every day count</i> . Oxford: Harley-Davidson Europe.
	Republished book	Surname, Initials. and Surname, Initials. (year). <i>Title</i> . Place of publication: Publisher (originally published by Publisher year).	Marshall, J.D. (1981). <i>Furness and the industrial revolution</i> . Beckermont: Michael Moon (originally published by Barrow Town Council 1958).
Journal and magazine articles	Journal article (originally printed but same as found online)	Surname, Initials. and Surname, Initials. (year). Title of article. <i>Journal name</i> . Vol. ##, No. ##, pp. ###-####.	Storey, J., Cressey, P., Morris, T. and Wilkinson, A. (1997). Changing employment practices in UK banking: case studies. <i>Personnel Review</i> . Vol. 26, No. 1, pp. 24–42.

Table A1.2 (continued)

To reference		Use the general format	For example
	Journal article only published online	Surname, Initials. and Surname, Initials. (year). Title of article, <i>Journal name</i> , Vol. ##, No. ##, pp. ###–###. Available at http:// www.remainderoffullInternetaddress/ [Accessed day month year].	Illingworth, N. (2001). The Internet matters: exploring the use of the Internet as a research tool. <i>Sociological Research Online</i> , Vol. 6, No. 2. Available at http://www.socresonline.org.uk/6/2/illingworth.html [Accessed 20 Mar. 2002].
	Journal article for which corrected proofs are available online but which is still to be published	Surname, Initials. and Surname, Initials. (year). Title of article, <i>Journal name</i> . Available at http://www.fulldoiInternetaddress/ [Accessed day month year].	Yang, D. (2008). Pendency and grant ratios on invention patents: A Comparative Study of the US and China, <i>Research Policy</i> . Available at http://dx.doi.org/10.1016/j.respol.2008.03.008 [Accessed 14 May 2008].
	Magazine article (no obvious author)	Corporate name or Publication name. (year). Title of article. <i>Magazine name</i> . Vol. ##, No. ## (or day month), p. ###.	Quality World. (2007). Immigration abuse. <i>Quality World</i> . Vol. 33, No 12, p. 6.
Government publications	Parliamentary papers including acts and bills	Country of origin. (year) <i>Title</i> . Place of publication: Publisher.	United Kingdom. (2005). <i>The Prevention of Terrorism Act</i> . London: The Stationery Office.
	Others (with authors)	As for books	As for books
	Others (no obvious authors)	Department name or Committee name. (year). <i>Title</i> . Place of publication: Publisher.	Department of Trade and Industry. (1992). <i>The Single Market: Europe Open for Professions, UK Implementation</i> . London: HMSO.
Newspapers, including CD-ROM databases	Newspaper article	Surname, Initials. and Surname, Initials. Title of article. <i>Newspaper name</i> , day month year, p. ## (where known).	Hawkes, S. Umbro slashes England shirt production. <i>The Times</i> . 24 Nov. 2007, p. 63.
	Newspaper article (no obvious author)	Newspaper name. Title of article, day month year, p. ## (where known).	The Times. Business big shot Steve Mankin, 24 Nov. 2007, p. 63.
	Newspaper article (from CD-ROM database, no obvious author)	Newspaper name. Title of article, day month year, [CD-ROM]. p. ## (where known).	Financial Times. Recruitment: lessons in leadership: moral issues are increasingly pertinent to the military and top corporate ranks, 11 Mar. 1998. [CD-ROM]. p. 32.
Other CD-ROM publications	CD-ROM	Surname, Initials. and surname, initials. (year). <i>Title of CD-ROM</i> . [CD-ROM]. Place of publication: Publisher.	Friedman, M., Friedman, R. and Adams, J. (2007). <i>Free to chase</i> . [CD-ROM]. Ashland, OR: Blackstone Audiobooks.

Table A1.2 (continued)

To reference		Use the general format	For example
	CD-ROM, no obvious author	Title of CD-ROM. (year). [CD-ROM]. Place of publication: Publisher.	Encarta 2006 Encyclopaedia. (2005). [CD-ROM]. Redmond, WA: Microsoft.
Unpublished conference papers		Surname, Initials. and Surname, Initials. (year). <i>Title of paper</i> . Unpublished paper presented at 'Conference name'. Location of conference, day month year.	Saunders, M.N.K., Thornhill, A. and Evans, C. (2007). <i>Conceptualising trust and distrust and the role of boundaries: an organisationally based exploration</i> . Unpublished paper presented at 'EIASM 4 th Workshop on Trust Within and Between Organisations'. Amsterdam, 25–26 Oct. 2007.
Letters, personal emails and electronic conferences/ bulletin boards	Letter	Sender's Surname, Sender's Initials. (year). Unpublished letter to Recipient's Initials. Recipient's Surname re. Subject matter, day, month, year	Saunders, J. (2008). Unpublished letter to M.N.K. Saunders re. French Revolution, 10 Sept. 2008.
	Personal email	Sender's surname, Sender's initials. (year). Email to recipient's initials. recipient's surname re. Subject matter, day month year.	McPartlin, A. (2008). Email to M.N.K. Saunders re. Reviewers' feedback, 23 Nov. 2008.
	Blog	Owner's Surname, Owner's Initials. (year of posting). Specific subject. <i>Title of Blog</i> . Day Month Year (of posting). Available at http://www.remainderoffullInternetaddress/ [Accessed day month year].	Bonham-Carter, D. (2007) Career Change Questionnaire. <i>David's life coaching blog</i> . 10 Dec 2007. Available at http://www.davidbonham-carter.com/2007/12/career-change-questionnaire.html [Accessed 11 Dec. 2007].
	Discussion list email (where emailer known)	Sender's Surname, Sender's Initials. (year of posting). Re. Subject of discussion. Posted day month year. Sender's email address. [Accessed day month year].	Manno, D.F. (2007). Re. I got an email solicitation. Posted 6 Dec 2007. Survey Pro or Con? dfma...@mail.com [Accessed 10 Dec. 2007].
	Internet site/specific site pages	Source organisation. (year). <i>Title of site or page within site</i> . Available at http://www.remainderoffullInternetaddress/ [Accessed day month year].	European Commission. (2007). <i>Eurostat – structural indicators</i> . Available at http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1133,47800773,1133_47802558&_dad=portal&_schema=PORTAL [Accessed 27 Nov. 2007].
	Internet reports and guides	Surname, Initials. and Surname, Initials. (year). <i>Title of report</i> . Available at http://www.remainderoffullInternetaddress/ [Accessed day month year].	Browne, L. and Alstrup, P. (eds.) (2006). <i>What exactly is the Labour Force Survey?</i> Available at http://www.statistics.gov.uk/downloads/theme_labour/What_exactly_is_LFS1.pdf [Accessed 25 Dec. 2007].

Table A1.2 (continued)

To reference		Use the general format	For example
	Internet reports and guides (no author)	Organisation name. (year). <i>Title of report</i> . Available at http://www.remainderoffullInternetaddress/ [Accessed day month year].	Department for Transport. (2007). <i>Adding capacity at Heathrow airport: consultation document</i> . Available at http://www.dft.gov.uk/consultations/open/heathrowconsultation/consultationdocument/ [Accessed 25 Dec. 2007].
Audio-visual material	Television or radio programme	<i>Programme title</i> . (year of production). Transmitting organisation and nature of transmission, day month year of transmission.	<i>The Today Programme</i> . (2008). British Broadcasting Corporation Radio broadcast, 6 Apr. 2008.
	Television or radio programme that is part of a series	<i>Series title</i> . (year of production). Episode. episode title. Transmitting organisation and nature of transmission, day month year of transmission.	<i>The Money Programme</i> . (2007). Episode. Last orders for Guinness. British Broadcasting Corporation Television broadcast, 11 Dec. 2007.
	Commercial DVD	<i>DVD title</i> . (Year of production). [DVD]. Place of publication: Publisher.	<i>Bruce Springsteen Live in New York City</i> (2003). [DVD]. New York: Sony.
	Commercial DVD that is part of a series	<i>DVD series title</i> (Year of production) Episode. Episode title. [DVD]. Place of publication: Publisher.	<i>The Office Complete Series 1 and 2 and the Christmas Specials</i> . (2005). Episode. Series 1 Christmas Special. [DVD]. London: British Broadcasting Corporation.
	Audio CD	Surname, Initials. or Artist. or Group. (year). <i>Title of CD</i> . [Audio CD]. Place of Publication: Publisher.	Goldratt, E.M. (2005). <i>Beyond the goal</i> . [Audio CD]. Buffalo NY: Goldratt's Marketing Group.

Notes: Where date is not known or unclear, follow conventions outlined towards the end of Table A1.1.

Email addresses should not be included except when they are in the public domain. Even where this is the case, permission should be obtained or the email address replaced by ‘. . .’ after the fourth character, for example: ‘abcd...@isp.ac.uk’.

For copies of journal articles from printed journals that you have obtained electronically via the Internet it is usually acceptable to reference these using exactly the same format as printed journal articles (**Table A1.2**), provided that you have obtained and read a facsimile (exact) copy of the article. Exact copies of journal articles have precisely the same format as the printed version, including page numbering, tables and diagrams. They are usually obtained by downloading the article via the Internet as a .pdf file that can be read on the screen and printed using Adobe Acrobat Reader.

Finally, remember to include a, b, c etc. immediately after the year when you are referencing different publications by the same author from the same year. Do not forget to ensure that these are consistent with the letters used for the references in the main text.

2) THE AMERICAN PSYCHOLOGICAL ASSOCIATION (APA) STYLE

The American Psychological Association style or APA style is a variation on the author-date system. Like the Harvard style it dates from the 1930s and 1940s, and has been updated subsequently. Relatively small but significant differences exist between the Harvard and APA styles, and many authors adopt a combination of the two styles. The key differences are outlined in **Table A1.3**.

Table A1.3 Key differences between Harvard and APA styles of referencing

Harvard style	APA style	Comment
Referencing in the text		
(Lewis 2001)	(Lewis, 2001)	Note punctuation
(Williams and Saunders 2006)	(Williams & Saunders, 2006)	'&' not 'and'
(Saunders <i>et al.</i> 2005)	(Saunders, Skinner & Beresford, 2005)	For first occurrence if three to five authors
(Saunders <i>et al.</i> 2005)	(Saunders <i>et al.</i> , 2005)	For first occurrence if six or more authors
(Saunders <i>et al.</i> 2005)	(Saunders <i>et al.</i> , 2005)	For subsequent occurrences; note punctuation
Referencing in the references or bibliography		
Berman Brown, R. and Saunders, M. (2008). <i>Dealing with statistics: What you need to know</i> . Maidenhead: Open University Press.	Berman Brown, R. & Saunders, M. (2008). <i>Dealing with statistics: What you need to know</i> . Maidenhead: Open University Press.	Note use of 'and' and '&'

Numeric systems

Reference in the text

When using a Numeric system such as the Vancouver style, references within the project report are shown by a number that is either bracketed or in superscript. This number refers directly to the list of references at the end of the text, and it means it is not necessary for you to include the authors' names or year of publication: 'Research¹ indicates that . . .'

Referencing in the references

The references list sequentially the referenced items in the order they are referred to in your project report. This means that they are unlikely to be in alphabetical order. When using the Numeric system you need to ensure that:

- The layout of individual references is that prescribed by the style you have adopted. This is likely to differ from both the Harvard and APA styles (Table A1.3) and will be dependent upon precisely which style has been adopted. The reference to Ritzer's book in the previous sub-section follows the Vancouver style. Further details of this and other numeric styles can be found in Neville's (2007) book.
- The items referred to include only those you have cited in your report. They, therefore, should be headed 'References' rather than 'Bibliography'.
- *Only one number is used for each item, except where you refer to the same item more than once but need to refer to different pages.* In such instances you use standard bibliographic abbreviations to save repeating the reference in full (Table A1.4).

Table A1.4 Bibliographic Abbreviations

Abbreviation	Explanation	For example
<i>Op. cit.</i> (<i>opere citato</i>)	Meaning 'in the work cited'. This refers to a work previously referenced, and so you must give the author and year and, if necessary, the page number.	Robson (2002) <i>op. cit.</i> pp. 23–4.
<i>Loc. cit.</i> (<i>loco citato</i>)	Meaning 'in the place cited'. This refers to the same page of a work previously referenced, and so you must give the author and year.	Robson (2002) <i>loc. cit.</i>
<i>Ibid.</i> (<i>ibidem</i>)	Meaning 'the same work given immediately before'. This refers to the work referenced immediately before, and replaces all details of the previous reference other than a page number if necessary.	<i>Ibid.</i> p. 59.

Note- Taking (Reviewing the Literature)

Once you have identified relevant sources of information, you have to start not-taking. The process of note- taking can be done either in the form of paraphrasing or directly quoting the author's ideas.

➤ ***Paraphrasing***

Paraphrasing may be defined as “restating or rewording a passage from a text, giving the same meaning in another form” (Hult, 1996, p.43.). The main objective of paraphrasing is to present an author's ideas in your own words. Often paraphrasing fails due to:

- misunderstanding of the passage by the reader, or
- partial understanding of the passage and trying to guess at the meaning rather than fully understanding it.

Therefore, accurate paraphrasing can be achieved through close reading and complete understanding of what is read. To facilitate your paraphrasing, Hult (1996, p.43.) suggests five guidelines as follows:

1. Place the information found in the source in a new order
2. Break the complex ideas into smaller units of meaning
3. Use concrete, direct vocabulary in place of technical jargon found in the original source.
4. Vary the sentence patterns.
5. Use synonyms for the words in the source.

How to paraphrase Appropriately

The following examples, extracted from Hult (1996, pp.46-48), are aimed at illustrating acceptable and unacceptable paraphrasing:

Original Passage

During the last two years of my medical course and the period which I spent in the hospitals as house physician, I found time, by means of serious encroachment on my night's rest, to bring to completion a work on the history of scientific research into the thought word of St. Paul, to revise and enlarge the Question of the Historical Jesus for the second edition, and together with Widor to prepare an edition of Bach's preludes and fugues for the organ, giving with each piece directions for its rendering. (*Albert Schweitzer, Out of My Life and Thought*. New York: Mentor, 1963, p.94)

A Poor Paraphrase

Schweitzer said that during the last two years of his medical course and the period he spent in the hospitals as house physician he found time, by encroaching on his night's rest, to bring to completion several works.

[Note: This paraphrase uses too many words and phrases from the original without putting them in quotation marks and thus is considered plagiarism. (Plagiarism is unauthorized use of an author's thoughts or ideas and presenting them as one's own). Furthermore, many of the ideas of the author have been left out, making the paraphrase incomplete. Finally, the student has neglected to acknowledge the source through a parenthetical citation.]

A Good paraphrase:

Albert schweitzer observed that by staying up late at night, first as a medical student and then as a "house physician," he was able to finish several major works, including a historical book on the intellectual world of St. Paul, a revised and expanded second edition of Question of the Historical Jesus, and a new edition of Bach's organ preludes and fugues complete with interpretive notes, written collaboratively with Widor (Schweitzer, 1963, p 94).

[Note: This paraphrase is very complete and appropriate; it does not use the author's own words, except in one instance, which is acknowledged by quotation marks. The student has included a parenthetical citation that indicates to the reader the paraphrase was taken from page 94 of the work by Schweitzer. The reader can find complete information on the work by turning to the bibliography at the end of the student's paper.]

➤ ***Incorporating Direct Quotes***

At times you may want to use direct quotes in addition to paraphrases and summaries. To incorporate direct quotes smoothly, observe the following general principles.

1. When your quotations are four lines in length or less, surround them with quotation marks and incorporate them into your text. When your quotations are longer than four lines, set them off from the rest of the text by indenting five spaces from the left and right margins and triple-spacing above and below them. You do not need to use quotation marks with such block quotes. Follow the block quote with the punctuation found in the source. Then skip two spaces before parenthetical citation. Do not include a period after the parentheses.
2. Introduce quotes using a verb tense that is consistent with the tense of the quote.
3. Change a capital letter to a lower-case letter (or vice versa) within the quote if necessary.
4. Use brackets for explanations or interpretations not in the original quote. ("Evidence reveals that boys are higher on conduct disorder [behavior directed toward the environment] than girls.")
5. Use ellipses (three spaced dots) to indicate that material has been omitted from the quote. It is not necessary to use ellipses for material omitted before the quote begins. ("Fifteen to twenty percent of anorexia victims die of direct starvation or related illnesses... [Which] their weak, immunizes bodies cannot combat.")
6. Punctuate a direct quote as the original was punctuated. However, change the end punctuation to fit the context. (For example, a quotation that ends with a period may require a comma instead of the period when it is integrated into your own sentence.)
7. A period, or a comma if the sentence continues after the quote, goes inside the quotation marks, (Although Almaz tries to disguise "her innate evil nature, it reveals itself at the slightest loss of control, as when she has a little alcohol") When the quote is followed with a

parenthetical citation, omit the punctuation before the quotation mark and follow the parentheses with a period or comma:

Alemu has" recognized the evil in himself, [and] is ready to act for good."

- 8 If an ellipsis occurs at the end of the quoted material, add a period before the dots. (Almaz is "more than Woman, who not only succumbs to the Serpent, but becomes the serpent itself... as she triumphs over her victims...")
- 9 Place question marks and exclamation points outside the quotation marks if the entire sentence is a question or an exclamation. (Has Sara read the article "separation in East of Eden"?)
- 10 Place question marks and exclamation points inside the quotation marks if and only if the quote itself is a question or an exclamation. (Mary attendee the lecture entitled "Is Cathy Really Eve? ")
- 11 Use a colon to introduce a quote if the introductory material prior to the quote is long or if the quote itself is more than a sentence or too long.

Taylor puts it this way: [Long quote indented from margin]

- 12 Use a comma to introduce a short quote. (Steinbeck explains, "If Cathy was simply a monster that would not bring her in the story.")

3.5. ORGANIZING YOUR LITERATURE REVIEW

Once you have finished collecting and reviewing the literature, you are then required to organize the information in a way that suits to your interest. To this end, it is useful to plan the review out beforehand in note form so that the right order and flow of argument, proposition and debate is achieved. Experience shows that taking precautions to the following points will lead to effective organization of the related literature.

1. Develop an outline or topic headings on which discussions of a review of the related literature follows.
2. Categorize the evidences of your review in light of your outline.
3. Use your hypotheses to help serve as a framework to organize the review.
4. Whenever necessary, try to ask your supervisor, manager, colleagues or fellow students for advice as to what is expected and as to how you can proceed organizing.

5. Start writing up in coherent manner by giving particular attention to appropriate citation of references.
6. Present a brief summary of your review at the end of this section.

Reviewing the literature checklist

A literature review is not just a question of displaying knowledge and erudition. Rather, it is evaluated by the extent to which the survey illuminates and carries forward the research focus and concerns. Therefore, when the literature survey has been written, checking the following points as recommended by Birly and Moreland (1998. P 96) appears to be relevant.

1. Has the emphasis been given to the most important and relevant authors and works?
2. Are the sources up to date?
3. Is the survey critical of authors and their work where appropriate?
4. Does the literature review focus on the research concerns and questions (and not deviate)?
5. Does it read well?

CHAPTER FOUR

RESEARCH DESIGN

.....

Chapter Objectives

In completion of the Chapter, the students should be able to:

- define concept of research design,
- comprehend the need for the research design,
- be familiar with important concepts related to research design
- explain the feature of the good research design,
- describe types of research design,

4.1 Meaning of Research Design

Following the selection of the problem in a very specific and concrete term, you are required to prepare a research design. According to Selltitz et al (1962:50), a “research design” is defined as “*the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.*” In other words, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data (Kothari, 2004:31). Accordingly, the design incorporates a framework of what the researcher is going to do from writing the basic questions and their operational implications to the final analysis of data. More specifically, the design decisions happen to be in respect of: What is the study about? Why is the study being made? Where will the study be carried out? What types of data are required? Where can the required data be found? What periods of time will the study include? What will be the sample design? What techniques of data collection will be used? How will the data be analyzed? In what style will the report be prepared?

When it is seen from the view points of the above stated design decisions, one may split the overall research design into the following major parts:

- (a) ***The sampling design:*** Which deals with the method of selecting items to be observed for the given study?
- (b) ***The observational design:*** Which relates the conditions under which the observations are to be made;

- (c) **The statistical design** : Which concerns with the question of how many items are to be observed, and how the information and data gathered are to be analyzed; and
- (d) **The operational design**: Which deals with the techniques by which the procedures specified in the sampling, statistical and observational designs can be carried out (Kothari, 2004).

To sum up, from what has been state so far, we can describe the research design as:

- It is a plan that specifies the sources and types of information relevant to the research problem;
- It is a Strategy specifying which method will be used for gathering and analyzing data;
- It is a point where the time and cost budgets of the research project are specified critically.

In brief, research design must, at least, contain—(a) a clear statement of the research problem; (b) procedures and techniques to be used for gathering information; (c) the population to be studied; and (d) methods to be used in processing and analyzing data; (e) time and cost breakdowns for the whole project.

4.2 Need for Research Design.

In any research endeavor, the preparation of thoroughly thought research design is needed for the following reasons:

1. Because it helps the researcher to organize his ideas in a form whereby it will be possible for him to look for flaws and inadequacies;
2. Because it facilitates the smooth running of various research operations;
3. Because it makes research to be as efficient as possible yielding maximal information with minimal expenditure of effort, time and money;
4. Because it serves as a framework for the process of reliable and valid data collection, and data analysis;
5. Because it saves the researcher from offering hasty generalizations or misleading conclusions; and
6. Because it serves as a basis for others to provide their genuine comments and comprehensive review of the proposed study.

Emphasizing the importance of a research design for any research activity, Kothari (2004) describes in such a way that just as we need a blueprint (or the map of the house) well thought out and prepared by an expert architect, so do we need a research design or plan in advance of data collection and analysis for our research project.

In general, research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be employed in their analysis. Therefore, preparation of the research design should be done with great care as any error in it may upset the entire project. In other words, thoughtlessness in designing the research project may result in rendering the research exercise futile.

4.3 Characteristics of a Good Design

The question of good design is related to the purpose or objective of the research problem and also with the nature of the problem to be studied. In light of these points, a research design is said to be good if it satisfies the following:

- The design which is characterized by adjectives like flexible, appropriate, efficient, economical, etc;
- The design which minimizes bias and maximizes the reliability of the data collected and analyzed;
- The design which gives the smallest experimental error;
- The design which yields maximal information and provides an opportunity for considering many aspects of a problem; and
- The design which involves the following:
 - ✓ The means of obtaining information,
 - ✓ The availability and skills of the researcher and his staff (in any),
 - ✓ The objective of the problem to be studied,
 - ✓ The nature of the problem to be studied,
 - ✓ Explanation of the way in which selected means of obtaining information will be organized and the reasoning leading to the selection, and
 - ✓ The availability of time and money for the research work (*Kothari, 2004, p.33*)

If the research study happens to be an exploratory or a formulative one, wherein the major emphasis is on discovery of ideas and insights, the research design most appropriate must be flexible enough to permit the consideration of many different aspects of a phenomenon. But when the purpose of a study is accurate description of a situation or of an association between variables (or in what are called the descriptive studies), accuracy becomes a major consideration and a research design which minimizes bias and maximizes the reliability of the evidence collected is considered a good design.

Studies involving the testing of a hypothesis of a causal relationship between variables require a design which will permit inferences about causality in addition to the minimization of bias and maximization of reliability. But in practice it is the most difficult task to put a particular study in a particular group, for a given research may have in it elements of two or more of the functions of different studies. It is only on the basis of its primary function that a study can be categorized either as an exploratory or descriptive or hypothesis-testing study and accordingly the choice of a research design may be made in case of a particular study. Besides, the availability of time, money, skills of the research staff and the means of obtaining the information must be given due weightage while working out the relevant details of the research design such as experimental design, survey design, sample design and the like.

4.4 Important Concepts Relating to Research Design

In view of *Kothari (2004:33)*, the preparation of a research design requires an understanding of various key concepts. These are briefly explained below.

1. **Dependent and independent variable:** A Variable is an indicator or measure of the construct of interest. A variable can be anything that has more than one value (e.g., sex, age, weight, income, religion, ESLCE scores). Variables should have operational definitions clearly stated.

If one variable depends upon or is consequence of the other variable, it is termed as a **dependent variable**, and the variable that is antecedent to the dependent variable is termed as an **independent variable**. These terms define, in part, how the variables relate to one another. Some researchers use the terms **causal** or **predictor** as synonymous with **independent** and **resultant** or **criterion** with **dependent** variables.

For instance, a researcher could examine the impact of heavy drinking of alcohol on liver. In this analysis, heavy drinking of alcohol would be an independent variable and the effect like liver disease could be considered as dependent variable. Similarly, ready-made films and lectures are examples of independent variables, whereas behavioral changes occurring as a result of the environmental manipulations are examples of dependent variables. In some instances, variables can be used as either independent or dependent in any given analysis. For example, one researcher could examine the influences of gender on ESLCE score. In this analysis, gender would be the independent variable and ESLCE performance is the dependent variable. However, in another analysis, the influences of ESLCE and gender on college or University choice could be explored. In this analysis, both gender and ESLCE result are independent variables and higher education institution choice would be the dependent variable.

2. **Extraneous variable:** A variable which interferes the effect of the relationship between the dependent and an independent variable is called extraneous or intervening variable. It is an independent variable that is not related to the purpose of the study, but may affect the dependent variable in some way. Suppose the researcher wants to test the hypothesis that there is a relationship between children's gains in social studies achievement and their self-concepts. In this case self-concepts is an independent variable and social studies achievement is a dependent variable. Intelligence may as well affect the social studies achievement, but since it is not related to the purpose of the study undertaken by the researcher, it will be termed as an extraneous variable. Similarly, in the study of the effect of socio-economic background of a student's family on learning, the variables such as IQ, age, school and other facilities may act as intervening variables. Whatever effect is noticed on dependent variable as a result of extraneous variables) is technically described as an 'experimental error'. A study must always be so designed that the effect upon the dependent variable is attributed entirely to the independent variable(s), and not to some extraneous variable(s).
3. **Control.** One important characteristic of a good research design is to minimize the influence or effect of extraneous variable(s). The technical term 'control' is used when we design the study minimizing the effects of extraneous variables. In experimental researches, the term 'control' is used to refer to restrain experimental conditions.

4. **Confounded relationship.** When the dependent variable is not free from the influence of extraneous variable(s), the relationship between the dependent and independent variables is said to be confounded by an extraneous variable(s).
5. **Research hypothesis.** The research hypothesis is a predictive statement that relates an independent variable to a dependent variable. Often a research hypothesis must contain, at least, one independent and one dependent variable. Predictive statements, which are not to be objectively verified or the relationships that are assumed but not to be tested, are not termed, as research hypotheses.
6. **Experimental and non- experimental hypothesis-testing research.** When the purpose of research is to test a research hypothesis, it is termed as hypothesis-testing research. It can be of the experimental design or of the non- experimental design. Research in which the independent variable is manipulated is termed ' experimental hypothesis-testing research' and a research in which an independent variable is not manipulated is called 'a non experimental hypothesis-testing research'. For instance, suppose a researcher wants to study whether intelligence affects reading ability for a group of students and for this purpose he randomly selects 50 students and tests their intelligence and reading ability by calculating the coefficient of correlation between the two sets of scores. This is an example of non-experimental hypothesis-testing research because herein the independent variable, intelligence, is not manipulated. But now suppose that our researcher randomly selects 50 students from a group of students who are to take a course in statistics and then divides them into two groups by randomly assigning 25 to Group A, the usual studies program, and 25 to Group B, the special studies program. At the end of the course, he administers a test to each group in order to judge the effectiveness of the training program on the student's performance level. This is an experimental hypothesis-testing research because in this case the independent variable, viz., the type training program, is manipulated.
7. **Experimental and control groups.** In an experimental hypothesis-testing research when a group is exposed to usual conditions, it is termed as ' Control group', but when the group is exposed to some novel or special condition, it is termed an ' experimental group.' In the above illustration, the Group A can be called a control group and the Group B an experimental group. If both groups A and B are exposed to special programs, then both groups would be

termed ' experimental groups'. It is possible to design studies, which include both experimental and control groups.

8. **Treatments.** The different conditions under which experimental and control groups are put are usually referred to as ' treatments'. In the illustration taken above; the two treatments are the usual studies program and the special studies program. Similarly, if we want to determine through an experiment the comparative impact of three varieties of fertilizers on the yield of wheat, in that case the three varieties of fertilizer will be considered as three treatments.
9. **Experiment.** The process of examining the truth of a statistical hypothesis, relating to some research problem, is known as an experiment. For example, we can conduct an experiment to examine the usefulness of a certain newly developed drug. Experiments can be of two types' viz., absolute experiment and comparative experiment. If we want to determine the impact of a fertilizer on the yield of a crop, it is a case of absolute experiment; but if we want to determine the impact of one fertilizer as compared to the impact of some other fertilizer, our experiment then will be termed as a comparative experiment. Often we undertake comparative experiments when we talk of designs of experiments.
10. **Experimental unit (s).** The predetermined plots or the block, where different treatments are used, are known as experimental units. Such experimental units must be selected (defined) very carefully.

4.5 Types of Research Design

Research designs can be broadly categorized into three: research design in case of exploratory research studies; research design in case of descriptive and diagnostic research studies; and research design in case of experimental (hypothesis-testing) research studies. Each of them is described below.

1. **Research design in case of exploratory research studies:**

Exploratory research studies are also termed as formative research studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypotheses from an operational point view. The major emphasis in such studies is on the discovery of ideas and insights. As such the research design appropriate for such studies must be flexible enough to provide opportunity for considering different aspects of a problem under study. In view of Kothari (1990:45), exploratory research design uses the following three methods: the

survey of concerning literature; the experience survey; and the analysis of 'insight-stimulating' examples.

- (a) The survey of concerning literature. In this method, hypotheses formulated by earlier workers may be reviewed and their usefulness be evaluated as a basis for further research. It may also be considered whether the already stated hypotheses suggest new hypothesis. In this way, the researcher should review and build upon the work already done by others, but in case where hypotheses have not yet been formulated, his task is to review the available material for deriving the relevant hypotheses from it.

Furthermore, the bibliographical survey of studies already made in one's area of interest may as well be made by the researcher for precisely formulating the problem. He should also make an attempt to apply concepts and theories developed in different research contexts to the area in which he is himself working. Sometimes the works of creative writers also provide a fertile ground for hypothesis-formulation and as such may be looked into by the researcher.

- (b) Experience survey. It means the survey of people who had practical experience with the problem to be studied. The main purpose of this survey is to obtain insight into the relationships between variables and new ideas relating to the research problem. For such a survey people who are competent and can contribute new ideas may be carefully selected as respondents to ensure representation of different types of experience. The researcher must prepare an interview schedule for the systematic questioning of informants who are carefully selected. But the interview must ensure flexibility in the sense that the respondents should be allowed to raise issues and question which the investigator has not previously considered. In this way, it is often considered desirable to send a copy of the questions to be discussed to the respondents well in advance. This gives an opportunity to the respondents for doing some advance thinking over the various issues involved so that, at the time of interview, they may be able to contribute effectively. Thus, an experience survey may enable the researcher to define the problem more concisely and help in the formulation of the research hypothesis. This survey may as well provide information about the practical possibilities for doing different types of research.

- (c) Analysis of 'insight- stimulating ' examples. This method consists of the intensive study of selected instance of the phenomenon in areas in which one is interested but has little exposure or experience in relation to it. For this purpose the available records, if any, may be examined, the unstructured interview may take place, or some other approach may be adopted. Attitude of the investigator, the intensity of the study and the ability of the researcher to draw together diverse information into a unified interpretation are the main features which make this method an appropriate procedure for evoking insights.

Issues or cases related to the reactions of strangers, the reactions of marginal individuals, the study of individuals who are in transition from one stage to another, the reactions of individuals from different social strata and the like could be treated by this method. In general, cases that provide sharp contrasts or have striking features are considered relatively more useful while adopting this method of hypotheses formulation.

2. **Research design in case of descriptive and diagnostic research studies:**

Descriptive research studies are those studies which are concerned with describing the characteristics of particular individuals, or groups, whereas diagnostic research studies determine the frequency with which something occur or its association with something else.

The studies concerning whether certain variables are associated are examples of diagnostic research studies. On the other hand, studies concerned with specific predictions, with narration of facts and characteristics concerning individual, group or situations are all examples of descriptive research studies. Most of the social research falls under this category. As far as the preparation of the research design is concerned the descriptive and diagnostic studies share common requirements and as such we may group together these two types of research studies. In both types of studies, the researcher must be able to define clearly, what he wants to measure and must find adequate methods for measuring it along with a clear cut definition of ' population' he wants to study. To achieve the aim of gathering complete and accurate information through these studies, the procedure to be used needs to be carefully planned. The research design must make enough provision for protection against bias and must maximize reliability, with due concern for the economical completion of the research

study. According *Kothari (2004:37)* the design in such studies must be rigid and not flexible and must focus attention on the following:

- (a) Formulating the objective of the study (what the study is about and why is it being made?)
- (b) Design the methods of data collection (what techniques of gathering data will be adopted?)
- (c) Selecting the sample (how much materials will be needed?)
- (d) Collecting the data (where can the required data be found and with what time period should the data be related?)
- (e) Processing and analyzing the data.
- (f) Reporting the findings in an efficient and effective manner.

Thus, the research design in case of descriptive/diagnostic studies is a comparative design throwing light on the above points step-by- step and must be prepared based on the objective(s) of the study as well as the resources available. However, it must ensure the minimization of bias and maximization of reliability of the evidence collected. The said design can be appropriately referred to as a survey design since it takes into account all the steps involved in a survey concerning a phenomenon to be studied.

The difference between research designs in respect of the above two types of research studies can be discerned in the following table.

Research Design	Type of study	
	Exploratory / formulative	Descriptive/Diagnostic
Overall design	Flexible design(design must provide opportunity for considering different aspects of the problem)	Rigid design (design must make enough, provision for protection against bias and must maximize reliability
(i) Sampling Design	Non-probability sampling design (purposive or judgments sampling)	Probability sampling design (random sampling).
(ii) Statistical design	No pre planned design for analysis	Pre planned design for analysis
(iii) Observational design	Unstructured instruments for collection of data	Structured or well thought out instruments for collection of data

(iv) Operational design	No fixed decisions about the operational procedures	Advanced decisions about operational procedures.
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Source: C.R. Kothari, *Research Methodology, Methods & Techniques*, 2004, p 39.

3. **Research design in case of experimental research studies:**

Experimental studies (or hypothesis -testing research studies) are those where the researcher tests the hypotheses of causal relationships between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will permit drawing inferences about causality. In particular, when we talk of research design in such studies, we often mean the design of experiments that ensure absence of bias and increase reliability

3.1. Basic Principles of Experimental Designs.

Professor Fisher, who is usually called the father of experimental design, has enumerated three principles of experimental designs:

- (1) the principle of Replication;
 - (2) the principle of Randomization; and
 - (3) the principle of Local Control.
1. The principle of Replication. This principle refers to the repetition of the experiment more than once. Therefore, each treatment is applied in many experimental units instead of one. This, in turn, helps to increase the statistical accuracy of the experiments. The following example that has been extracted from *kothari (1990:50)* intends to illustrate the principle of Replication in detail.

Suppose we are to examine the effect of two varieties of rice. For this purpose we may divide the field into two parts and grow one variety in one part and the other variety in the other part. We can then compare the yield of the two parts and draw conclusion on that basis. But if we are to apply the principle of replication to this experiment, then we first divide the field into several parts, grow one variety in half of these parts and the other variety in the remaining parts. We can then collect the data of yield the two varieties and draw conclusion by comparing the same. The result so obtained will be more reliable in comparison to the conclusion we draw without applying the principle of replication. The entire experiment can even be repeated several times for better results.

2. The Principle of Randomization. Conduction of experiment under this principle provides protection against the effects of extraneous factors by randomization. In other words, this principle indicates that we should design or plan the experiment in such a way that the variations caused by extraneous factors can all be combined under the general heading of "Chance." For example, if we grow one variety of rice, say, in the first half of the parts of a field and the other variety is grown in the other half, then it is just possible that the soil fertility may be different in the first half comparison to the other half. This makes our results unrealistic. In such a situation, we may assign the variety of rice to be grown in different parts of the field on the basis of some random sampling technique, i.e, we may apply randomization principle and protect ourselves against the effect of the extraneous factors (soil fertility differences in the given case.) As such, through the application of the principle of randomization, we can have a better estimate of the experimental error.
3. The principle of Local Control. Under this principle, the extraneous factor, the known source of variability, is made to vary deliberately over as wide a range as necessary and these needs to be done in such a way that the variability it causes can be measured and hence eliminated from the experimental error. This means that we should plan the experiment in a manner that we can perform a two-way analysis of variance, in which the total variability of the data is divided into three components attributed to treatments (varieties of rice in our case), the extraneous factor (soil fertility in our case), and experimental error. In other words, according to the principle of local control, we first divide the field into several homogeneous parts, known as blocks, and then each such block is divided into parts equal to the number of treatments. Then the treatments are randomly assigned to these parts of a block. Blocks are the levels at which we hold an extraneous factor fixed, so that we can measure its contribution to the total variability of the data by means of a two-way analysis of variance. In short, through the principle of local control we can eliminate the variability due to extraneous factor(s) from the experimental error.

UNIT FIVE

SAMPLING DESIGN

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5.1 Census and Sample Survey

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. But what is population/census? Population refers to any collection of specified group of human beings or of non-human entities such as objects, educational institutions, countries states, clubs, industries etc. A population containing a finite number of individual's members or units is called a finite population. For instance, the total number of towns in Ethiopia, the people of Ethiopia, the number of books in ECSU library, etc., represents a finite population. On the other hand a population with an infinite number of units is called infinite population. For instance, the population of heads and tails obtained by tossing a coin with unlimited number of times, and the population of pressures at various points in the atmosphere, the number of stars in the sky represent infinite population.

A complete enumeration of all items in the population is known as a census inquiry. A sample is a subset of a population to which the researcher has selected with a due care and intends to generalize the results of the study to the entire population. Algebraically, let the population size be N . If a part of size n (which is $n < N$) of the population is selected according to some rule for studying some characteristics of the population, the group consisting of these n units is known as sample. The selected respondents should be as representative of the total population as possible so that the information gathered from this group ideally will be as accurate as the data that would gather from the entire population. The selection process is called **sampling technique** and the survey so conducted is known as sample survey.

5.2 The Need for Sampling

For some research questions it is possible to collect data from an entire population as it is of a manageable size. However, you should not assume that a census would necessarily provide more

useful results than collecting data from a sample which represents the entire population. Sampling provides a valid alternative to a census when:

- it would be impracticable for you to survey the entire population;
- your budget constraints prevent you from surveying the entire population;
- your time constraints prevent you from surveying the entire population;
- you have collected all the data but need the results quickly.

For all research questions where it would be impracticable for you to collect data from the entire population, you need to select a sample. This will be equally important whether you are planning to use interviews, questionnaires, observation or some other data collection technique.

As such, both quantitative and qualitative empirical studies, or studies that examine characteristics, behavior, and other phenomena as they occur in the real world, are likely to require selection of a sample rather than making a census. Members of the sample are the units to be measured observed, or questioned in the course of the study. The major reason for taking a sample is cost effectiveness. Contacting a smaller group will save postage, printing and data processing costs as well as time in assembling mailings and editing as well as coding the results.

5.3 Characteristics of a Good Sample Design

The basic features of a quality sample design include the following.

- Sample design must result in a truly representative sample.
- Sample design must be the one which results in a small sampling error.
- Sample design must be viable in the context of funds available for the research study
- Sample design must be the one in which systematic bias can be controlled in a battery way.
- Sample design should be such that the results of the sample study can be applied in general for the universe with a reasonable level of confidence.

5.4 Steps in Sampling Design

Often there are four major steps that are applied in the process of sample selection. These include the following:

1. Defining the population

The first step in the process of sampling is specifying the population of the study. The population needs to be properly defined so that there is no ambiguity as to whether a given unit belongs to the population. On the other hand, if a population is not properly defined, a researcher faces a difficulty in knowing what units to consider when selecting the sample. Furthermore inferences concerning a population cannot be drawn in the absence of clearly defined population. Therefore, a researcher should pay due attention for the definition of the population in unambiguous fashion right at the beginning of sampling.

For instance, in a survey of achievement in ESLCE a researcher will have to identify the population of students by status (regular or private), the type of schools, the geographical area, or by the academic year for which the data will be gathered.

2. Listing the population

After defining the population of interest for a given study, it is quite necessary to prepare the list of names of all items of the universe (incase of finite population only). The complete list of the members of a population is known as ***sampling frame or source list***. Such a list should be comprehensive, correct, reliable and appropriate. It is absolutely essential for the source list to be as representative of the population as possible.

For example, if you are interested in studying about gender differences in Mathematics achievements of freshman students at ECSU the sampling frame is the list of the names of all freshman male and female students at the college in a given academic year. In this case, you are ready to identify the sample unit for your study.

3. Selecting a representative sample

After defining a population and preparing a sampling frame a researcher selects a sample of units from the source list. The process of such a selection is known as ***sampling***. To serve a useful purpose sampling should be unbiased representative. A good sample must be as nearly representative of the entire population as possible and ideally it must provide the whole of information about the population from which the sample has been drawn.

4. Obtaining an adequate sample

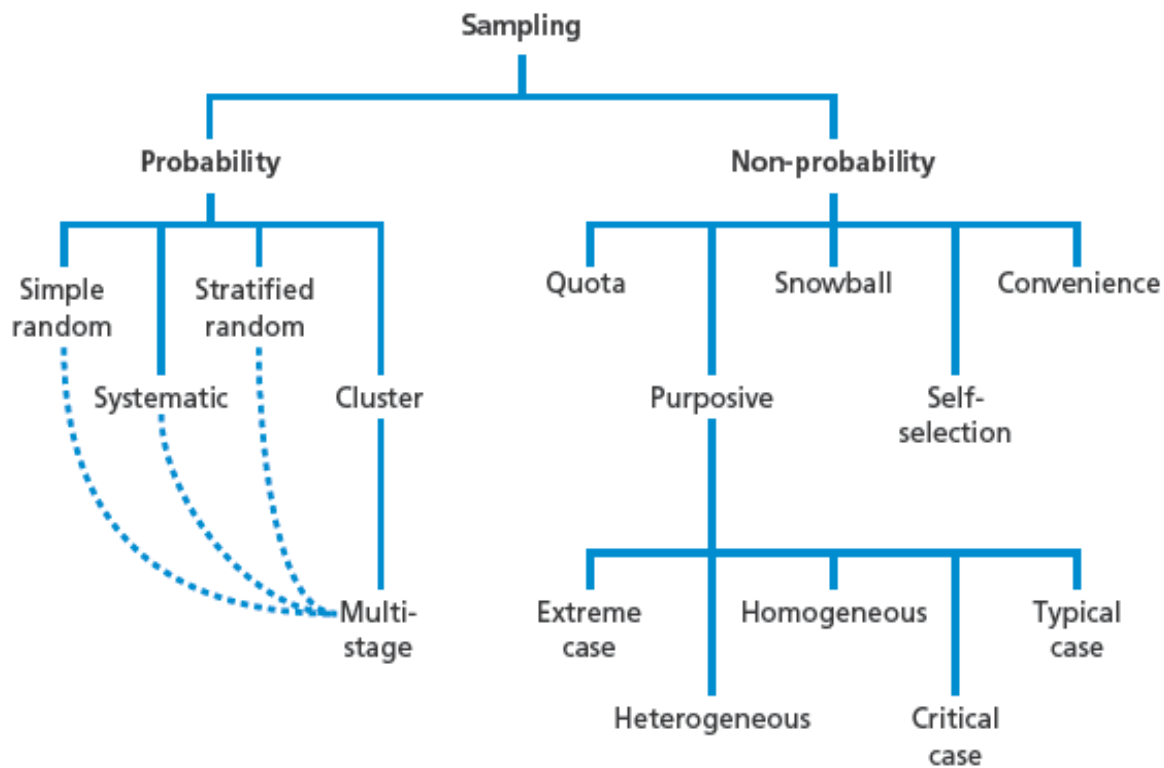
The Size of sample should be optimum, which is neither excessively large nor too small. An optimum or adequate sample is one which fulfills the requirements of efficiency, representativeness, reliability and flexibility. In principle, a sample is sufficient for homogeneous population, but a much larger sample is necessary if there is greater variability in the units of the population. For this reason, Stutely's (2003) advice of a minimum number of 30 for statistical analyses provides a useful rule of thumb for the smallest number in each category within your overall sample. Where the population in the category is less than 30, and you wish to undertake your analysis at this level of detail, you should normally collect data from all cases in that category.

In general, if a greater precision of results in an investigation is needed (with the exception of an intensive laboratory research where many measurements are taken upon each subject), the sample should be larger. Therefore, the determination of the size of a sample should be seen in view of the degree of the precision of the research used the parameters of interest in a research study, the size of the population variance, and the costs of the research.

5.5 Types of Sampling

There are different kinds of sampling designs depending on the types of study being conducted and the kinds of conclusions the researcher would like to be able to draw from the study results. These differences determine how members of the sample should be chosen. Generally speaking, there are two broad categories of sampling. These include the following.

- 1. *Probability sampling and***
- 2. *Non-probability sampling***



Source: Saunders et al 2009

Each of them is discussed in brief in the sections that follow.

1. Probability Sampling

Probability sampling (also called random sampling) is based on the concept of random selection. In this type of sampling the units of the population are chosen by means of certain procedures which ensure, that every members of the population has one fixed probability of being included in the sample. Probability sampling is the most preferred types of sampling because of the following peculiar characteristics:

- The units of the population are not selected based on the discretion of the researcher.
- Each unit in the population has some known probability of entraining the sample.
- Weights appropriate to the probabilities are used in the analysis of the sample
- The process of sampling is automatic in one or more steps of selection of units in the sample.

a. Simple random sampling

In simple random sampling each unit of the population is given equal chance of being selected. In this method, the selection of any one unit is in no way tied to the selection of any other. The law of chance is allowed to operate freely in the selection of such a sample and carefully controlled conditions are created to ensure that each unit in the population has an equal chance of being included in the sample. There are different mechanisms of choosing a sample through this method. These include the following.

(i) *The Lottery System.*

In this method, the researcher assigns serial numbers to the corresponding names of the population. Then after he prepares a set of tickets or cards equally to the number of population with numbers corresponding to the population members written on them. The tickets or cards will be thoroughly mixed up and then n tickets will be drawn one by one, if he sample of n size is required. The units which have serial numbers occurring on these in tickets will be considered as members of the sample.

For example a researcher has 180 members of a study population from which he intends to draw a sample of size 50. To choose these 50 members for his sample, he should first prepare the complete list for the names of the population and the number corresponding to each name. Then after, he writes the numbers corresponding to each name on pieces of cards or papers which will be rolled and put into a container or pot. After shuffling the pot well, he pulls 50 members as a result of drawing each piece of card one by one.

(ii) *Using the Random Number Table*

Various scholars like Fisher, Yates, Tippet, Kendall and Babington-Smith have prepared tables of random numbers which can be used for selecting a random sample. In this case, after using consecutive numbers to units of the population, the researcher starts at any point on the table of random numbers and read consecutive numbers in any direction, horizontally, vertically, or diagonally. When a number is read that corresponds with that written on a unit card, that unit is chosen for the sample.

It should also be noted that drawing random samples from finite populations with the aid of random number tables is possible if when lists are available and units are readily number.

However, in some situations it is often impossible to proceed in the way that we explained above. For instance, if we want to estimate the mean height of trees in a forest, it would not be possible to number the trees and choose random numbers to select a random sample. In such situations what we should do is to select some trees for the sample haphazardly without aim or purpose and should treat the sample as a random sample for study purposes.

b. Systematic Random Sampling

In systematic sampling, a researcher generally starts with a list in which all the N units of the population are listed in alphabetic or some other order. To select a sample of size n , he has to select a unit at random from the first K units of the list and the every K^{th} subsequent unit is selected. The number K is so chosen that NK is less than or equal to N (or $K = \frac{N}{n}$)

For example, suppose there is a list of 100 industries from which a systematic sample 7 industries is required. The researcher may select an industry at random from the first 14 industries of the list because $7 \times 14 = 98$ is just short of 100. Let the industry at serial number 6 be selected from the first 14 industries then the researcher shall select every 14th industry. From the list to get a systematic sample of the industry at serial numbers 6, 20, 34, 48, 62, 76, and 90.

While this approach is simple and less costly than simple random sampling technique, the researcher may run the risk of committing key components from his sample, and at times, his findings might become unreliable. For instance, every 25th item produced by a certain production process is defective. If we are to select a 4% sample of the item of this process in a systematic manner, we would either get all defective items or all good items in our sample depending upon the random starting position. However, systematic random sampling could be effective if all elements of the universe are ordered in a manner representative of the total population i.e. the population list in random order.

c. Stratified Sampling

If a population from which a sample is to be drawn constitutes a heterogeneous group, stratified sampling is generally applied in order to obtain a representative sample. A stratified sample is obtained by separating the population elements into non-overlapping groups, called strata. The usual stratification factors include sex, age, socio-economic status, educational background,

academic rank, residence (urban or rural) occupation, religion, caste, general intelligence and so on.

For example, suppose a researcher is interested in stratifying the groups by academic rank, such as full professors, associate professors, and assistant professors. In this case, the stratified sampling consists of listing all professors together in homogeneous group, then all associate professors then all assistants. After that is done, a random (or systematic) sample is drawn within each group. In addition to stratifying on professional rank, the investigator could simultaneously stratify on sex, providing six groups instead of three female full professors, male full professors, female assoc. professors, male assoc. professors, female asst. professors, and male asst. professors).

Since each stratum is more homogeneous than the total population, we are able to get more precise estimates for each stratum and by estimating more accurately each of the component parts; we get a better estimate of the whole. Besides, the application of this procedure saves a considerable amount of time and money. In short, the use of stratified sampling is more economical, reliable and unbiased than that of systematic random sampling technique.

The efficiency of the stratified random sample depends upon the allocation of samples size to strata. The simplest and most common system of allocation of sample units among strata is in proportion to the sample size of the strata. In other words, if the groups are not naturally the same, the smaller subgroups will need to be over-sampled while the larger subgroups are under-sampled. That is, if P_1 represents the proportion of population included in stratum I, and n represents the total sample size the number of elements selected from stratum I is $n \cdot P_1$. To illustrate it, let us suppose that we want a sample of size $n=30$ to be drawn from a population of size $N=8000$ which is divided into three strata of size $N_1 = 4000$, $N_2 = 2000$ and $N_3 = 1600$. Adopting proportional allocation, we shall get the sample sizes as under for different strata:

For strata with $N_1 = 4000$, we have $P_1 = 4000/8000 = \frac{1}{2}$ and hence $n_1 = n \cdot P_1 = 30 \cdot \frac{1}{2} = 15$

For strata with $N_2 = 2000$ we have $P_2 = 2000/8000 = \frac{1}{4}$ and hence $n_2 = n \cdot P_2 = 30 \cdot \left(\frac{1}{4}\right) = 7.5$ and

For strata with $N_3 = 1600$, we have $P_3 = 1600/8000 = \frac{1}{5}$ and hence $n_3 = n \cdot P_3 = 30 \cdot \frac{1}{5} = 6$

Thus, the sample sizes for different strata are 15, 9 and 6 respectively which is in proportion to the sizes of the strata, 4000:2400:1600

d. Cluster Sampling

A cluster sample is a type of random sample in which sampling units is a collection, or cluster, of elements. It involves division of elements of a population into groups and then randomly select some of these smaller groups (usually called clusters) with the ultimate sample consisting of all (or parts of) units in these clusters. This type of sampling is applied when the size of the study population extremely large or infinite, a list of population members does not exist, the geographical distribution of the members is scattered or when the selection of individual members is not convenient for a number of reasons. In such situations, the population should be divided into a number of relatively smaller divisions (or clusters) and then selected some of these clusters randomly so that they are included in the sample. To illustrate, let us suppose a researcher is interested in investigating the achievement of 5th grade students in mathematics examination in Ethiopia primary schools. It is practically impossible to test all fifth grade students in the country by an individual researcher.

In this case, since the fifth graders are naturally grouped regions, zones, woredas , schools and classes the researcher may take zones, woredas, or schools as clusters, then he may test all (or a portion) of students from the selected schools as his sample. If clusters happen to be some geographic subdivisions, in that case cluster sampling is better called as area sampling. For instance, in the above example, when zones or woredas are used instead of schools, the sampling method is called area sampling as the primary sampling units represents cluster of units based on geographical area.

Unlike stratified sampling, in which every stratum is sampled, cluster sampling samples among groups or clusters. Besides, in cluster sampling the exact sample size may not be known before the sample is selected.

The table below shows the difference between the stratified and cluster sampling techniques.

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<i>STRATIFIED SAMPLING</i>	<i>CLUSTER SAMPLING</i>
<i>1. We divide the population into a few sub-groups, each with many elements according to the variables under study.</i>	<i>1. We divide the population into many sub-groups, each with few elements in it. The sub group is selected according to some criterion of ease or availability in data collection</i>
<i>2. We try to secure homogeneity within sub-groups and heterogeneity between sub-groups.</i>	<i>2. We try to secure heterogeneity within subgroup and homogeneity between subgroups, but we usually get the reverse.</i>
<i>3. We randomly choose elements from within each group/strata</i>	<i>3. We randomly choose a number of the subgroups, which we then typically study in to.</i>

e. Multi-Stage Sampling.

This is a further development of the cluster sampling. This technique is used for large scale surveys or inquiries extending to a considerably large geographical area like an entire country or nation. In this case, the researcher may have to use two, three, or four stage sampling. The first stage may be to select large primary sampling units such as regional states, then administrative zones, then woredas, and finally certain families within woredas.

For example, suppose a researcher wants to investigate about the opinions of merchants towards the free market investment policy in Ethiopia. So he may draw sample of merchants as follows: A sample of 5 regional states could be randomly selected from northern, eastern, southern, western and central regions. From the 5 regions all zones could be listed and a random sample of 50 zones selected. From the 50 zones all woredas could be listed and random sample of 100 woredas selected. It would not be difficult to compile a list of all merchants in 100 woredas and a random sample of 700 merchants selected. The successive random sampling of regions, zones, woredas, and finally of merchants constitutes a multi-stage (four –stage) sample

Almost all random sampling techniques assume that you have a complete and accurate list of all members of the population from which you wish to select your sample. However, in reality, this is

rarely the case. For example, alumni files are notoriously incomplete. Even rosters of currently enrolled students always include a few students with missing, incomplete, or outdated addresses. Surveys administered to a class in person will miss absent students.

This problem becomes particularly serious when you are trying to survey the public at large, as you might engage yourself in a “community needs” assessment, voter registration, etc. there is usually no complete, accurate list available of the people from which you wish to choose your sample. Often, in such instances, you might be compelled to recognize and accept such incidences and precede analyzing the findings as well as reporting the results of your study.

2. Non-Probability Sampling

In non-probability sampling, the units are selected at the discretion of researcher. Such samples drive their control from the judgment of the researcher. Some of the disadvantages of non probability sampling include the following:

- No confidence can be placed in the data obtained from such samples as they do not represent the larger population. Therefore, the results obtained cannot be generalized for the entire population.
- The selective sampling is based on convenience affects the variance within groups as well as between groups and so sampling error of such samples cannot be determined.
- Non-probability samples depend exclusively on uncontrolled factors and researchers in sight, and there is no statistical method to determine the margin of sampling errors.
- Sometimes such samples are based on an obsolete frame which does not adequately cover the population.

The obvious advantage of non-probability sampling is that it is much less complicated, much less expensive, and may be done on a spur-of-the-moment basis to take advantage of the available (and perhaps unanticipated) respondents without the statistical complexity of a probability sample. A non-probability sampling method is very convenient in the situations when the sample to be selected is very small and the researcher wants to get some idea of the population characteristics.

or of the problem using well-informed members in a short time. The non-probability sample may prove perfectly adequate if the researcher has no desire to generalize his findings beyond the sample, or if the study is merely a trail run for a larger study. If the researcher plans to repeat the study at a later date, he may initially be more interested in perfecting the questionnaire than in the sample and may find a non-probability sampling adequate.

There are five basic types of non-probability sample, which include convenience sampling, quota sampling, dimensional sampling, purposive sampling, and snowball sampling.

a. Convenience Sampling

In convenience or accidental sampling, the investigator merely chooses the closest live persons as respondents. A common example is “captive audience” Sampling, as in the use of introductory social-science students as questionnaire respondents. In general, the availability and willingness to respond are the major factors in selecting the respondents.

b. Quota Sampling

Quota sampling is the non probability sampling which is equivalent to stratified sampling with added requirement that each stratum is generally represented in the sample in the same proportion as in the entire population. When stratified random sampling is impractical to use because of difficulty of getting complete list of the units in the strata of a population, quota sampling becomes appropriate.

In quota sampling one first decides which strata may be relevant for the study to be conducted (e.g. Republicans and Democrats for a study of voting behavior in USA, Blacks, whites, and Chicanos for a study of race relation). Then the investigator sets a quota for each stratum that is proportionate to its representation in the entire population.

c. Dimensional Sampling

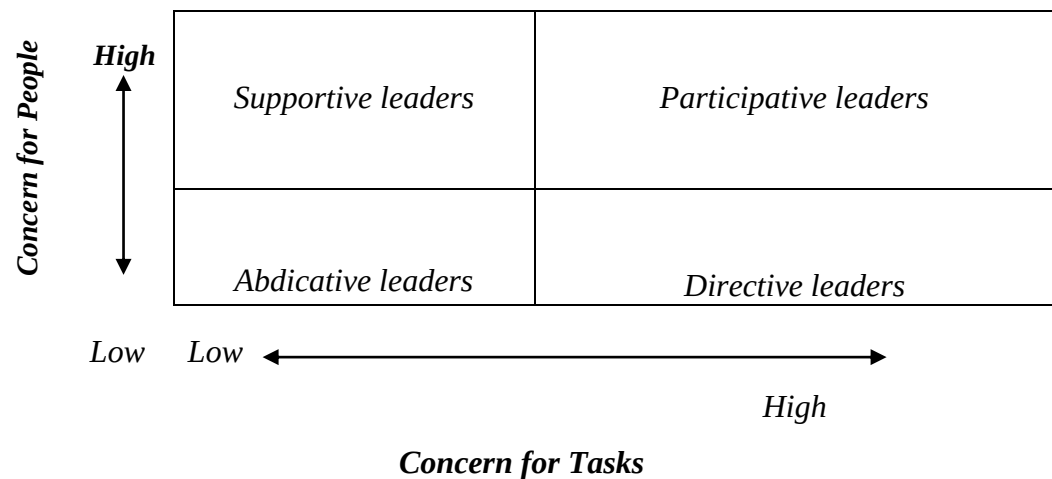
Dimensional sampling is basically a multidimensional form of quota sampling. The idea is to specify all dimensions (variables) of interest in the population and then to make sure that every

combination of these dimensions is represented by at least one case. For efficient use of such a method; you must note the following points:

- Explicitly delineate the population to which you eventually wish to generalize,
- Spell out what appear to be the most important dimensions along which the members of this population vary and develop a typology that includes the various combinations.
- Use this typology as a sampling frame for selecting a small number of cases from the population, typically drawing one case from each cell of the typology (Arnold, 1970 as cited in Bailey, 1982:98)

This method is designed for studies in which only a small sample is desired so that each case drawn can be studied in more detail than is possible in a large scale study. It is designed to overcome the danger of missing important variables in selection of small application of this method as follows;

Figure 5.1 Two Dimensional Leadership Model (Bartol and Martin, 1991:488)



d. Purposive Sampling

In purposive or judgmental sampling the investigator does not necessarily have a quota to fill from within various strata, as in quota sampling, but neither does he just pick the nearest warm bodies, as in convenience sampling. Rather, the researcher uses his own judgment about which respondents to choose, and picks only those who best meet the purposes on the study (Bailey, 1982:99). The obvious advantage of purposive or deliberate sampling is that the research can use his research skill and prior knowledge to choose respondents.

e. Snowball Sampling

According to Bailey (1982:99-100), the term, “snowball” stems from the analogy of a snowball, being small but becomes bigger and bigger as it rolls downhill. Adapted from such a concept, a snowball sampling has gained popularity among scholars conducting observational research and community studies.

This method of sampling is conducted in stages. In the first stage a few persons having requisite characteristics are identified and interviewed. The second stage involves interviewing these persons, who in turn lead to still more persons who can be interviewed in the third stage, and so on.

5.6 Sampling Error and Sampling Bias

Sampling studies are subject to sampling and non sampling errors which are of a random and/or of a constant nature. The errors created due to sampling and of which the average magnitude can be determined are called *sampling errors*, while others are called *sampling bias*. These concepts are discussed in detail below.

a. Sampling errors

These are errors that are created because of chance only. Although a sample is properly selected, there will be some difference between the estimates obtained from the sample (sample statistics) and the actual value in the population (parameters). The mean of the sample might be different from the population mean by chance alone. The standard deviation of the sample will probably be different from the population standard deviation. We can therefore expect some difference between the sample statistics (such as the mean and the standard deviation) and the corresponding population values, known as parameters. This difference is known as the sampling error. To illustrate this idea, let us suppose an individual student has scored the following grades in five subjects (the population): 69, 86, 82, 70 and 98. A sample of two grades is selected at random from this population to estimate her mean grade. They are let us say 70 & 86. The mean of this sample is 78. The mean of another sample of two grades (69 & 98) is 83.5. The mean of all five grades (the population) is 81. Notice that sampling errors of -3 and 2.5 are made in estimating the population (computed by application of the formula, sampling error = statistics-parameter). Such

a difference can be minimized by developing a sampling distribution for the sample means. In relation to this point, one should note that the mean of the sampling distribution and the mean of the population are equal. Besides, the variations due to random fluctuation (or sampling error) decrease as the sample size increases. However, it is impossible to avoid the sampling error completely.

b. Sampling bias (systematic error)

Sampling bias is a non-sampling error which can be created from errors in the sampling procedures, and it cannot be reduced or eliminated by increasing the sample size. Such error occurs because of human mistakes and not chance. The possible factors that contribute to the creation of such bias include inappropriate sampling frame, accessibility bias, defective measuring device, and non-response bias (or defects in data collection).

Inappropriate sampling

If the sampling unit is misrepresentation of the universe, it will result in sampling bias. This could happen when a researcher gathers data from a sample that was drawn from some favored locations. It occurs when there is a failure of all units in the Universe to have some probability of being selected for the sample (under coverage). For example suppose a researcher plans to study on the attitude of adults towards education in Ethiopia. If political party membership lists are used as a basis for random selection of samples, the sample is not considered representative of the general adult population as it has been selected from a biased source.

Accessibility bias

In a considerable number of research studies, researchers tend to select respondents who are the most accessible to them (easily reached). But it should be noted that when all members of the population are not equally accessible, the researcher must provide some mechanisms of controlling so as to ensure the absence of over- and under-representation of some respondents.

Defective measuring device

In some instances, the questions may not be phrased so they are fully understandable by respondents. Consequently, the answers obtained are not accurate. Further more, on any measuring device (or instrument), most individuals are likely to be mismeasured to some degree

due to errors in procedures of observation, interviewing, coding, etc. for instance, if in the testing of a sample of students for general mental ability, the researcher unintentionally allows an extra time of 5 minutes for the test, there will probably be a systematic tendency for the sample statistic to be higher than it should be and, therefore, there will be a bias in the measurement of mental ability.

None-Response bias

This is an incomplete coverage of sample or inability to get complete responses from all the individuals initially included in the sample. This arises due to failure in locating some of the individuals of the population selected from the sample or due to their refusal to respond. Non-response errors are also due to the respondents not possessing correct information or due to their giving deliberately biased responses. The respondents may intentionally give false information in response to some sensitive questions. For instance, people may not tell the truth about drinking habits, incomes, or opinions about minorities. Sometimes the respondents may give wrong answers because of ignorance. For example, a person may not remember the exact amount he spent on clothes during the last years. If asked in a survey, he may give an inaccurate answer. All of these examples result in non sampling errors. Note that non sampling errors can occur both in a sample survey and in a census, whereas the sampling errors occur only when a sample survey is conducted. Non-sampling errors can be minimized by preparing the survey questionnaire and handling the data cautiously

5.7 Samples Size Determination

The size of the sample is determined by a number of factors such as the availability of resources (e.g., cost, time, and personnel), the nature of the population (degree of heterogeneity or homogeneity), the degree of accuracy we seek or magnitude of difference we wish to test the confidence levels we wish to use, the appropriate size of the population from which the sample is drawn, and the response rate. In any case, the size of the actual sample must be larger enough:

- to allow for reliable analysis of cross-tabulation;
- to provide for desired levels of accuracy in estimates of proportions, and
- to test for significance of difference between proportions.

UNIT FIVE

SAMPLING DESIGN

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5.8 Census and Sample Survey

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. But what is population/census? Population refers to any collection of specified group of human beings or of non-human entities such as objects, educational institutions, countries states, clubs, industries etc. A population containing a finite number of individual's members or units is called a finite population. For instance, the total number of towns in Ethiopia, the people of Ethiopia, the number of books in ECSU library, etc., represents a finite population. On the other hand a population with an infinite number of units is called infinite population. For instance, the population of heads and tails obtained by tossing a coin with unlimited number of times, and the

population of pressures at various points in the atmosphere, the number of stars in the sky represent infinite population.

A complete enumeration of all items in the population is known as a census inquiry. A sample is a subset of a population to which the researcher has selected with a due care and intends to generalize the results of the study to the entire population. Algebraically, let the population size be N . If a part of size n (which is $n < N$) of the population is selected according to some rule for studying some characteristics of the population, the group consisting of these n units is known as sample. The selected respondents should be as representative of the total population as possible so that the information gathered from this group ideally will be as accurate as the data that would gather from the entire population. The selection process is called **sampling technique** and the survey so conducted is known as sample survey.

5.9 The Need for Sampling

For some research questions it is possible to collect data from an entire population as it is of a manageable size. However, you should not assume that a census would necessarily provide more useful results than collecting data from a sample which represents the entire population. Sampling provides a valid alternative to a census when:

- *it would be impracticable for you to survey the entire population;*
- *your budget constraints prevent you from surveying the entire population;*
- *your time constraints prevent you from surveying the entire population;*
- *you have collected all the data but need the results quickly.*

For all research questions where it would be impracticable for you to collect data from the entire population, you need to select a sample. This will be equally important whether you are planning to use interviews, questionnaires, observation or some other data collection technique.

As such, both quantitative and qualitative empirical studies, or studies that examine characteristics, behavior, and other phenomena as they occur in the real world, are likely to require selection of a sample rather than making a census. Members of the sample are the units to be measured observed, or questioned in the course of the study. The major reason for taking a sample is cost effectiveness. Contacting a smaller group will save postage, printing and data processing costs as well as time in assembling mailings and editing as well as coding the results.

5.10 Characteristics of a Good Sample Design

The basic features of a quality sample design include the following.

- Sample design must result in a truly representative sample.
- Sample design must be the one which results in a small sampling error.
- Sample design must be viable in the context of funds available for the research study
- Sample design must be the one in which systematic bias can be controlled in a battery way.
- Sample design should be such that the results of the sample study can be applied in general for the universe with a reasonable level of confidence.

5.11 Steps in Sampling Design

Often there are four major steps that are applied in the process of sample selection. These include the following:

5. Defining the population

The first step in the process of sampling is specifying the population of the study. The population needs to be properly defined so that there is no ambiguity as to whether a given unit belongs to the population. On the other hand, if a population is not properly defined, a researcher faces a difficulty in knowing what units to consider when selecting the sample. Furthermore inferences concerning a population cannot be drawn in the absence of clearly defined population. Therefore, a researcher should pay due attention for the definition of the population in unambiguous fashion right at the beginning of sampling.

For instance, in a survey of achievement in ESLCE a researcher will have to identify the population of students by status (regular or private), the type of schools, the geographical area, or by the academic year for which the data will be gathered.

6. Listing the population

After defining the population of interest for a given study, it is quite necessary to prepare the list of names of all items of the universe (incase of finite population only). The complete list of the members of a population is known as **sampling frame or source list**. Such a list should be comprehensive, correct, reliable and appropriate. It is absolutely essential for the source list to be as representative of the population as possible.

For example, if you are interested in studying about gender differences in Mathematics achievements of freshman students at ECSU the sampling frame is the list of the names of all freshman male and female students at the college in a given academic year. In this case, you are ready to identify the sample unit for your study.

7. Selecting a representative sample

After defining a population and preparing a sampling frame a researcher selects a sample of units from the source list. The process of such a selection is known as **sampling**. To serve a useful purpose sampling should be unbiased representative. A good sample must be as nearly representative of the entire population as possible and ideally it must provide the whole of information about the population from which the sample has been drawn.

8. Obtaining an adequate sample

The Size of sample should be optimum, which is neither excessively large nor too small. An optimum or adequate sample is one which fulfills the requirements of efficiency, representativeness, reliability and flexibility. In principle, a sample is sufficient for homogeneous population, but a much larger sample is necessary if there is greater variability in the units of the population. For this reason, Stutely's (2003) advice of a minimum number of 30 for statistical analyses provides a useful rule of thumb for the smallest number in each category within your overall sample. Where the population in the category is less than 30, and you wish to undertake your analysis at this level of detail, you should normally collect data from all cases in that category.

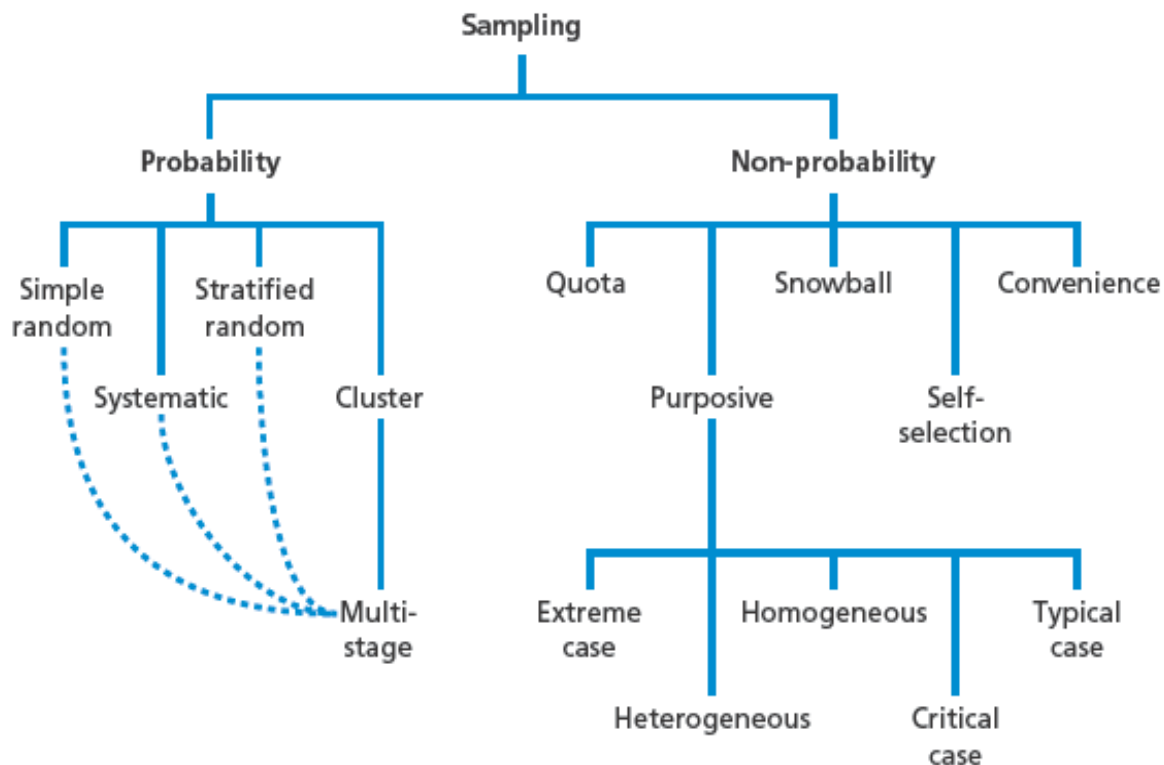
In general, if a greater precision of results in an investigation is needed (with the exception of an intensive laboratory research where many measurements are taken upon each subject), the sample should be larger. Therefore, the determination of the size of a sample should be seen in view of the degree of the precision of the research used the parameters of interest in a research study, the size of the population variance, and the costs of the research.

5.12 Types of Sampling

There are different kinds of sampling designs depending on the types of study being conducted and the kinds of conclusions the researcher would like to be able to draw from the study results. These differences determine how members of the sample should be chosen. Generally speaking, there are two broad categories of sampling. These include the following.

3. *Probability sampling and*

4. *Non-probability sampling*



Source: Saunders et al 2009

Each of them is discussed in brief in the sections that follow.

3. Probability Sampling

Probability sampling (also called random sampling) is based on the concept of random selection. In this type of sampling the units of the population are chosen by means of certain procedures which ensure, that every members of the population has one fixed probability of being included in

the sample. Probability sampling is the most preferred types of sampling because of the following peculiar characteristics:

- The units of the population are not selected based on the discretion of the researcher.
- Each unit in the population has some known probability of entraining the sample.
- Weights appropriate to the probabilities are used in the analysis of the sample
- The process of sampling is automatic in one or more steps of selection of units in the sample.

f. Simple random sampling

In simple random sampling each unit of the population is given equal chance of being selected. In this method, the selection of any one unit is in no way tied to the selection of any other. The law of chance is allowed to operate freely in the selection of such a sample and carefully controlled conditions are created to ensure that each unit in the population has an equal chance of being included in the sample. There are different mechanisms of choosing a sample through this method. These include the following.

(iii) The Lottery System.

In this method, the researcher assigns serial numbers to the corresponding names of the population. Then after he prepares a set of tickets or cards equally to the number of population with numbers corresponding to the population members written on them. The tickets or cards will be thoroughly mixed up and then n tickets will be drawn one by one, if he sample of n size is required. The units which have serial numbers occurring on these in tickets will be considered as members of the sample.

For example a researcher has 180 members of a study population from which he intends to draw a sample of size 50. To choose these 50 members for his sample, he should first prepare the complete list for the names of the population and the number corresponding to each name. Then after, he writes the numbers corresponding to each name on pieces of cards or papers which will be rolled and put into a container or pot. After shelving the pot well, he pulls 50 members as a result of drawing each piece of card one by one.

(iv) Using the Random Number Table

Various scholars like Fisher, Yates, Tippet, Kendall and Babington-Smith have prepared tables of random numbers which can be used for selecting a random sample. In this case, after using consecutive numbers to units of the population, the researcher starts at any point on the table of random numbers and read consecutive numbers in any direction, horizontally, vertically, or diagonally. When a number is read that corresponds with that written on a unit card, that unit is chosen for the sample.

It should also be noted that drawing random samples from finite populations with the aid of random number tables is possible if when lists are available and units are readily number. However, in some situations it is often impossible to proceed in the way that we explained above. For instance, if we want to estimate the mean height of trees in a forest, it would not be possible to number the trees and choose random numbers to select a random sample. In such situations what we should do is to select some trees for the sample haphazardly without aim or purpose and should treat the sample as a random sample for study purposes.

g. Systematic Random Sampling

In systematic sampling, a researcher generally starts with a list in which all the N units of the population are listed in alphabetic or some other order. To select a sample of size n , he has to select a unit at random from the first K units of the list and the every K^{th} subsequent unit is selected. The number K is so chosen that NK is less than or equal to N (or $K = \frac{N}{n}$)

For example, suppose there is a list of 100 industries from which a systematic sample 7 industries is required. The researcher may select an industry at random from the first 14 industries of the list because $7 \times 14 = 98$ is just short of 100. Let the industry at serial number 6 be selected from the first 14 industries then the researcher shall select every 14th industry. From the list to get a systematic sample of the industry at serial numbers 6, 20, 34, 48, 62, 76, and 90.

While this approach is simple and less costly than simple random sampling technique, the researcher may run the risk of committing key components from his sample, and at times, his findings might become unreliable. For instance, every 25th item produced by a certain production process is defective. If we are to select a 4% sample of the item of this process in a systematic

manner, we would either get all defective items or all good items in our sample depending upon the random starting position. However, systematic random sampling could be effective if all elements of the universe are ordered in a manner representative of the total population i.e. the population list in random order.

h. Stratified Sampling

If a population from which a sample is to be drawn constitutes a heterogeneous group, stratified sampling is generally applied in order to obtain a representative sample. A stratified sample is obtained by separating the population elements into non-overlapping groups, called strata. The usual stratification factors include sex, age, socio-economic status, educational background, academic rank, residence (urban or rural) occupation, religion, caste, general intelligence and so on.

For example, suppose a researcher is interested in stratifying the groups by academic rank, such as full professors, associate professors, and assistant professors. In this case, the stratified sampling consists of listing all professors together in homogeneous group, then all associate professors then all assistants. After that is done, a random (or systematic) sample is drawn within each group. In addition to stratifying on professional rank, the investigator could simultaneously stratify on sex, providing six groups instead of three female full professors, male full professors, female assoc. professors, male assoc. professors, female asst. professors, and male asst. professors).

Since each stratum is more homogeneous than the total population, we are able to get more precise estimates for each stratum and by estimating more accurately each of the component parts; we get a better estimate of the whole. Besides, the application of this procedure saves a considerable amount of time and money. In short, the use of stratified sampling is more economical, reliable and unbiased than that of systematic random sampling technique.

The efficiency of the stratified random sample depends upon the allocation of samples size to strata. The simplest and most common system of allocation of sample units among strata is in proportion to the sample size of the strata. In other words, if the groups are not naturally the same, the smaller subgroups will need to be over-sampled while the larger subgroups are under-

sampled. That is, if P_1 represents the proportion of population included in stratum I, and n represents the total sample size the number of elements selected from stratum I is $n \cdot P_1$. To illustrate it, let us suppose that we want a sample of size $n=30$ to be drawn from a population of size $N=8000$ which is divided into three strata of size $N_1 = 4000$, $N_2 = 2000$ and $N_3 = 1600$. Adopting proportional allocation, we shall get the sample sizes as under for different strata:

For strata with $N_1 = 4000$, we have $P_1 = 4000/8000 = \frac{1}{2}$ and hence $n_1 = n \cdot P_1 = 30 \cdot \frac{1}{2} = 15$

For strata with $N_2 = 2400$ we have $P_2 = 2400/8000 = \frac{3}{10}$ and hence $n_2 = n \cdot P_2 = 30 \cdot \left(\frac{3}{10}\right) = 9$ and

For strata with $N_3 = 1600$, we have $P_3 = 1600/8000 = \frac{1}{5}$ and hence $n_3 = n \cdot P_3 = 30 \cdot \frac{1}{5} = 6$

Thus, the sample sizes for different strata are 15, 9 and 6 respectively which is in proportion to the sizes of the strata, 4000:2400:1600

i. Cluster Sampling

A cluster sample is a type of random sample in which sampling units is a collection, or cluster, of elements. It involves division of elements of a population into groups and then randomly select some of these smaller groups (usually called clusters) with the ultimate sample consisting of all (or parts of) units in these clusters. This type of sampling is applied when the size of the study population extremely large or infinite, a list of population members does not exist, the geographical distribution of the members is scattered or when the selection of individual members is not convenient for a number of reasons. In such situations, the population should be divided into a number of relatively smaller divisions (or clusters) and then selected some of these clusters randomly so that they are included in the sample. To illustrate, let us suppose a researcher is interested in investigating the achievement of 5th grade students in mathematics examination in Ethiopia primary schools. It is practically impossible to test all fifth grade students in the country by an individual researcher.

In this case, since the fifth graders are naturally grouped regions, zones, woredas, schools and classes the researcher may take zones, woredas, or schools as clusters, then he may test all (or a portion) of students from the selected schools as his sample. If clusters happen to be some geographic subdivisions, in that case cluster sampling is better called as area sampling. For

instance, in the above example, when zones or woredas are used instead of schools, the sampling method is called area sampling as the primary sampling units represents cluster of units based on geographical area.

Unlike stratified sampling, in which every stratum is sampled, cluster sampling samples among groups or clusters. Besides, in cluster sampling the exact sample size may not be known before the sample is selected.

The table below shows the difference between the stratified and cluster sampling techniques.

<i>STRATIFIED SAMPLING</i>	<i>CLUSTER SAMPLING</i>
<i>4. We divide the population into a few sub-groups, each with many elements according to the variables under study.</i>	<i>4. We divide the population into many sub-groups, each with few elements in it. The sub group is selected according to some criterion of ease or availability in data collection</i>
<i>5. We try to secure homogeneity within sub-groups and heterogeneity between sub-groups.</i>	<i>5. We try to secure heterogeneity within subgroup and homogeneity between subgroups, but we usually get the reverse.</i>
<i>6. We randomly choose elements from within each group/strata</i>	<i>6. We randomly choose a number of the subgroups, which we then typically study in to.</i>

j. Multi-Stage Sampling.

This is a further development of the cluster sampling. This technique is used for large scale surveys or inquiries extending to a considerably large geographical area like an entire country or nation. In this case, the researcher may have to use two, three, or four stage sampling. The first stage may be to select large primary sampling units such as regional states, then administrative zones, then woredas, and finally certain families within woredas.

For example, suppose a researcher wants to investigate about the opinions of merchants towards” the free market” investment policy in Ethiopia. So he may draw sample of merchants as

follows: A sample of 5 regional states could be randomly selected from northern, eastern, southern, western and central regions. From the 5 regions all zones could be listed and a random sample of 50 zones selected. From the 50 zones all woredas could be listed and random sample of 100 woredas selected. It would not be difficult to compile a list of all merchants in 100 woredas and a random sample of 700 merchants selected. The successive random sampling of regions, zones, woredas, and finally of merchants constitutes a multi-stage (four –stage) sample

Almost all random sampling techniques assume that you have a complete and accurate list of all members of the population from which you wish to select you sample. However, in reality, this is rarely the case. For example, alumni files are notoriously incomplete. Even rosters of currently enrolled students always include a few students with missing, incomplete, or outdated addresses. Surveys administered to a class in person will miss absent students.

This problem becomes particularly serious when you are trying to survey the public at large, as you might engage yourself in a “community needs” assessment, voter registration, etc. there is usually no complete, accurate list available of the people from which you wish to choose your sample. Often, in such instances, you might be compelled to recognize and accept such incidences and precede analyzing the findings as well as reporting the results of your study.

4. Non-Probability Sampling

In non-probability sampling, the units are selected at the discretion of researcher. Such samples drive their control from the judgment of the researcher. Some of the disadvantages of non probability sampling include the following:

- No confidence can be placed in the data obtained from such samples as they do not represent the larger population. Therefore, the results obtained cannot be generalized for the entire population.
- The selective sampling is based on convenience affects the variance within groups as well as between groups and so sampling error of such samples cannot be determined.
- Non-probability samples depend exclusively on uncontrolled factors and researchers in sight, ad there is no statistical method determine the margin of sampling errors.

- Sometimes such samples are based on an obsolete frame which does not adequately cover the population.

The obvious advantage of non-probability sampling is that it is much less complicated, much less expensive, and may be done on a spur-of-the-moment basis to take advantage of the available (and perhaps unanticipated) respondents without the statistical complexity a probability sample. A non-probability sampling method is very convenient in the situations when the sample to be selected is very small and the researcher wants to get some idea of the population characteristics or of the problem using well-informed members in a short time. The non-probability sample may prove perfectly adequate if the researcher has no desire to generalize his findings beyond the sample, or if the study is merely a trail run for a larger study. If the researcher plans to repeat the study at a later date, he may initially be more interested in perfecting the questionnaire than in the sample and may find a non-probability sampling adequate.

There are five basic types of non-probability sample, which include convenience sampling, quota sampling, dimensional sampling, purposive sampling, and snowball sampling.

f. Convenience Sampling

In convenience or accidental sampling, the investigator merely chooses the closest live persons as respondents. A common example is “captive audience” Sampling, as in the use of introductory social-science students as questionnaire respondents. In general, the availability and willingness to respond are the major factors in selecting the respondents.

g. Quota Sampling

Quota sampling is the non probability sampling which is equivalent to stratified sampling with added requirement that each stratum is generally represented in the sample in the same proportion as in the entire population. When stratified random sampling is impractical to use because of difficulty of getting complete list of the units in the strata of a population, quota sampling becomes appropriate.

In quota sampling one first decides which strata may be relevant for the study to be conducted (e.g. Republicans and Democrats for a study of voting behavior in USA, Blacks, whites, and

Chicanos for a study of race relation). Then the investigator sets a quota for each stratum that is proportionate to its representation in the entire population.

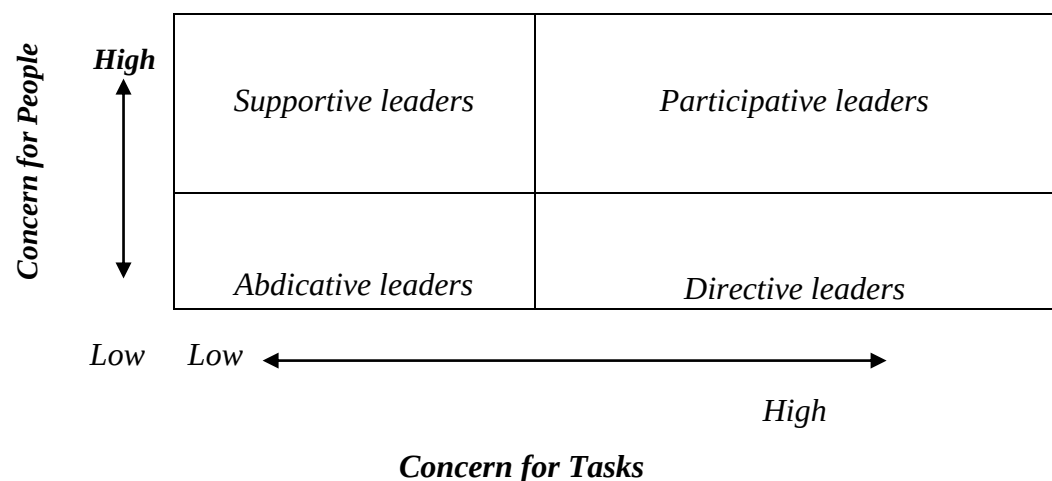
h. Dimensional Sampling

Dimensional sampling is basically a multidimensional form of quota sampling. The idea is to specify all dimensions (variables) of interest in the population and then to make sure that every combination of these dimensions is represented by at least one case. For efficient use of such a method; you must note the following points:

- Explicitly delineate the population to which you eventually wish to generalize,
- Spell out what appear to be the most important dimensions along which the members of this population vary and develop a typology that includes the various combinations.
- Use this typology as a sampling frame for selecting a small number of cases from the population, typically drawing one case from each cell of the typology (Arnold, 1970 as cited in Bailey, 1982:98)

This method is designed for studies in which only a small sample is desired so that each case drawn can be studied in more detail than is possible in a large scale study. It is designed to overcome the danger of missing important variables in selection of small application of this method as follows;

Figure 5.1 Two Dimensional Leadership Model (Bartol and Martin, 1991:488)



i. Purposive Sampling

In purposive or judgmental sampling the investigator does not necessarily have a quota to fill from within various strata, as in quota sampling, but neither does he just pick the nearest warm bodies, as in convenience sampling. Rather, the researcher uses his own judgment about which respondents to choose, and picks only those who best meet the purposes of the study (Bailey, 1982:99). The obvious advantage of purposive or deliberate sampling is that the research can use his research skill and prior knowledge to choose respondents.

j. Snowball Sampling

According to Bailey (1982:99-100), the term, “snowball” stems from the analogy of a snowball, being small but becomes bigger and bigger as it rolls downhill. Adapted from such a concept, a snowball sampling has gained popularity among scholars conducting observational research and community studies.

This method of sampling is conducted in stages. In the first stage a few persons having requisite characteristics are identified and interviewed. The second stage involves interviewing these persons, who in turn lead to still more persons who can be interviewed in the third stage, and so on.

5.13 Sampling Error and Sampling Bias

Sampling studies are subject to sampling and non sampling errors which are of a random and/or of a constant nature. The errors created due to sampling and of which the average magnitude can be determined are called *sampling errors*, while others are called *sampling bias*. These concepts are discussed in detail below.

c. Sampling errors

These are errors that are created because of chance only. Although a sample is properly selected, there will be some difference between the estimates obtained from the sample (sample statistics) and the actual value in the population (parameters). The mean of the sample might be different from the population mean by chance alone. The standard deviation of the sample will probably be different from the population standard deviation. We can therefore expect some difference between the sample statistics (such as the mean and the standard deviation) and the corresponding population values, known as parameters. This difference is known as the sampling error. To

illustrate this idea, let us suppose an individual student has scored the following grades in five subjects (the population): 69, 86, 82, 70 and 98. A sample of two grades is selected at random from this population to estimate her mean grade. They are let us say 70 & 86. The mean of this sample is 78. The mean of another sample of two grades (69 & 98) is 83.5. The mean of all five grades (the population) is 81. Notice that sampling errors of -3 and 2.5 are made in estimating the population (computed by application of the formula, sampling error = statistics-parameter). Such a difference can be minimized by developing a sampling distribution for the sample means. In relation to this point, one should note that the mean of the sampling distribution and the mean of the population are equal. Besides, the variations due to random fluctuation (or sampling error) decrease as the sample size increases. However, it is impossible to avoid the sampling error completely.

d. Sampling bias (systematic error)

Sampling bias is a non-sampling error which can be created from errors in the sampling procedures, and it cannot be reduced or eliminated by increasing the sample size. Such error occurs because of human mistakes and not chance. The possible factors that contribute to the creation of such bias include inappropriate sampling frame, accessibility bias, defective measuring device, and non-response bias (or defects in data collection).

Inappropriate sampling

If the sampling unit is misrepresentation of the universe, it will result in sampling bias. This could happen when a researcher gathers data from a sample that was drawn from some favored locations. It occurs when there is a failure of all units in the Universe to have some probability of being selected for the sample (under coverage). For example suppose a researcher plans to study on the attitude of adults towards education in Ethiopia. If political party membership lists are used as a basis for random selection of samples, the sample is not considered representative of the general adult population as it has been selected from a biased source.

Accessibility bias

In a considerable number of research studies, researchers tend to select respondents who are the most accessible to them (easily reached). But it should be noted that when all members of the

population are not equally accessible, the researcher must provide some mechanisms of controlling so as to ensure the absence of over- and under-representation of some respondents.

Defective measuring device

In some instances, the questions may not be phrased so they are fully understandable by respondents. Consequently, the answers obtained are not accurate. Further more, on any measuring device (or instrument), most individuals. Are likely to be mismeasured to some degree due to errors in procedures of observation, interviewing, coding, etc. for instance, if in the testing of a sample of students for general mental ability, the researcher unintentionally allows an extra time of 5 minutes for the test, there will probably be a systematic tendency for the sample statistic to be higher than it should be and, therefore, there will be a bias in the measurement of mental ability.

None-Response bias

This is an incomplete coverage of sample or inability to get complete responses from all the individuals initially included in the sample. This arises due to failure in locating some of the individuals of the population selected from the sample or due to their refusal to respond. Non-response errors are also due to the respondents not possessing correct information or due to their giving deliberately biased responses. The respondents may intentionally give false information in response to some sensitive questions. For instance, people may not tell the truth about drinking habits, incomes, or opinions about minorities. Sometimes the respondents may give wrong answers because of ignorance. For example, a person may not remember the exact amount he spent on clothes during the last years. If asked in a survey, he may give an inaccurate answer. All of these examples result in non sampling errors. Note that non sampling errors can occur both in a sample survey and in a census, whereas the sampling errors occur only when a sample survey is conducted. Non-sampling errors can be minimized by preparing the survey questionnaire and handling the data cautiously

5.14 Samples Size Determination

The size of the sample is determined by a number of factors such as the availability of resources (e.g., cost, time, and personnel), the nature of the population (degree of heterogeneity or homogeneity), the degree of accuracy we seek or magnitude of difference we wish to test the

confidence levels we wish to use, the appropriate size of the population from which the sample is drawn, and the response rate. In any case, the size of the actual sample must be larger enough:

- to allow for reliable analysis of cross-tabulation;
- to provide for desired levels of accuracy in estimates of proportions, and
- to test for significance of difference between proportions.

UNIT SIX

DATA COLLECTION

Learning outcomes:

By the end of this chapter you should be able to:

- identify the different sources of primary and secondary data;
- identify the full variety of primary and secondary data that are available;
- appreciate ways in which primary and secondary data can be utilized to help to answer research question(s) and to meet objectives;
- understand the advantages and disadvantages of using primary and secondary data in research projects;

- evaluate the suitability of primary and secondary data for answering research question(s) and meeting objectives in terms of coverage, validity, reliability and measurement bias;
- apply the knowledge, skills and understanding gained to your own research project.

6.1 PRIMARY AND SECONDARY DATA

The task of data collection begins after a research problem has been defined and research design/ plan chalked out. While deciding about the method of data collection to be used for the study, the researcher should keep in mind two types of data viz., primary and secondary. The *primary data* are those which are collected afresh and for the first time, and thus happen to be original in character.

The *secondary data*, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process. The researcher would have to decide which sort of data he would be using (thus collecting) for his study and accordingly he will have to select one or the other method of data collection. The methods of collecting primary and secondary data differ since primary data are to be originally collected, while in case of secondary data the nature of data collection work is merely that of compilation. We describe the different methods of data collection, with the pros and cons of each method.

6.2 COLLECTION OF PRIMARY DATA.

There is a wide variety of primary data gathering tools available to researchers in the social sciences; deciding which to use depend on:

- the particular methodology or type of research that has been selected;
- What is feasible in a given research situation;
- What is likely to yield the most appropriate information?

All these items are decided upon in the context of the particular research problem.

Some of the more important data collecting methods for survey or descriptive research studies are *questionnaire, schedules, interview, observation, focus group discussions and case study methods*. Each of them is briefly discussed below.

6.2.1. COLLECTION OF DATA THROUGH QUESTIONNAIRES

This method of data collection is quite popular, particularly in case of big enquiries. It is being adopted by private individuals, research workers, private and public organizations and even by governments. In this method a questionnaire is sent (usually by post) to the persons concerned with a request to answer the questions and return the questionnaire. As stated by Kothari (2004: 100) a questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms. The questionnaire is mailed to respondents who are expected to read and understand the questions and write down the reply in the space meant for the purpose in the questionnaire itself. The respondents have to answer the questions on their own.

The method of collecting data by mailing the questionnaires to respondents is most extensively employed in various economic and business surveys.

The merits claimed on behalf of this method are as follows:

1. There is low cost even when the universe is large and is widely spread geographically.
2. It is free from the bias of the interviewer; answers are in respondents' own words.
3. Respondents have adequate time to give well thought out answers.
4. Respondents, who are not easily approachable, can also be reached conveniently.
5. Large samples can be made use of and thus the results can be made more dependable and reliable.

The main demerits of this system can also be listed here:

1. Low rate of return of the duly filled in questionnaires; bias due to no-response is often indeterminate.
2. It can be used only when respondents are educated and cooperating.
3. The control over questionnaire may be lost once it is sent.
4. There is inbuilt inflexibility because of the difficulty of amending the approach once questionnaires have been dispatched.

5. There is also the possibility of ambiguous replies or omission of replies altogether to certain questions; interpretation of omissions is difficult.
6. It is difficult to know whether willing respondents are truly representative.
7. This method is likely to be the slowest of all.

Before using this method, it is always advisable to conduct 'pilot study' (Pilot Survey) for testing the questionnaires. In a big enquiry the significance of pilot survey is felt very much. Pilot survey is in fact the replica and rehearsal of the main survey. Such a survey, being conducted by experts, brings to the light the weaknesses (if any) of the questionnaires and also of the survey techniques. From the experience gained in this way, improvement can be effected.

Main aspects of a questionnaire:

Quite often questionnaire is considered as the heart of a survey operation. Hence it should be very carefully constructed. If it is not properly set up, then the survey is bound to fail. This fact requires us to study the main aspects of a questionnaire viz., the general form, question sequence and question formulation and wording. Researcher should note the following with regard to these three main aspects of a questionnaire:

1. General form: So far as the general form of a questionnaire is concerned, it can either be structured or unstructured questionnaire. Structured questionnaires are those questionnaires in which there are definite, concrete and pre-determined questions. The questions are presented with exactly the same wording and in the same order to all respondents. Resort is taken to this sort of standardization to ensure that all respondents reply to the same set of questions. The form of the question may be either closed (i.e., of the type 'yes' or 'no') or open (i.e., inviting free response) but should be stated in advance and not constructed during questioning. Structured questionnaires may also have fixed alternative questions in which responses of the informants are limited to the stated alternatives. Thus a highly structured questionnaire is one in which all questions and answers are specified and comments in the respondent's own words are held to the minimum.

When these characteristics are not present in a questionnaire, it can be termed as unstructured or non-structured questionnaire. More specifically, we can say that in an unstructured questionnaire, the interviewer is provided with a general guide on the type of information to be obtained, but the exact question formulation is largely his own responsibility and the replies are to be taken down

in the respondent's own words to the extent possible; in some situations tape recorders may be used to achieve this goal.

Structured questionnaires are simple to administer and relatively inexpensive to analyze. The provision of alternative replies, at times, helps to understand the meaning of the question clearly. But such questionnaires have limitations too. For instance, wide range of data and that too in respondent's own words cannot be obtained with structured questionnaires. They are usually considered inappropriate in investigations where the aim happens to be to probe for attitudes and reasons for certain actions or feelings. They are equally not suitable when a problem is being first explored and working hypotheses sought. In such situations, unstructured questionnaires may be used effectively. Then on the basis of the results obtained in pretest (testing before final use) operations from the use of unstructured questionnaires, one can construct a structured questionnaire for use in the main study.

2. Question sequence: In order to make the questionnaire effective and to ensure quality to the replies received, a researcher should pay attention to the question-sequence in preparing the questionnaire. A proper sequence of questions reduces considerably the chances of individual questions being misunderstood. The question-sequence must be clear and smoothly-moving, meaning thereby that the relation of one question to another should be readily apparent to the respondent, with questions that are easiest to answer being put in the beginning. The first few questions are particularly important because they are likely to influence the attitude of the respondent and in seeking his desired cooperation. The opening questions should be such as to arouse human interest.

The following type of questions should generally be avoided as opening questions in a questionnaire:

1. questions that put too great a strain on the memory or intellect of the respondent;
2. questions of a personal character;
3. questions related to personal wealth, etc.

Following the opening questions, we should have questions that are really vital to the research problem and a connecting thread should run through successive questions. Relatively difficult

questions must be relegated towards the end so that even if the respondent decides not to answer such questions, considerable information would have already been obtained. Thus, question-sequence should usually go from the general to the more specific and the researcher must always remember that the answer to a given question is a function not only of the question itself, but of all previous questions as well.

3. Question formulation and wording: With regard to this aspect of questionnaire, the researcher should note that each question must be very clear for any sort of misunderstanding can do irreparable harm to a survey. Question should also be impartial in order not to give a biased picture of the true state of affairs. Questions should be constructed with a view to their forming a logical part of a well thought out tabulation plan. In general, all questions should meet the following standards—(a) should be easily understood; (b) should be simple i.e., should convey only one thought at a time; (c) should be concrete and should conform as much as possible to the respondent's way of thinking. (For instance, instead of asking, "How many razor blades do you use annually?" The more realistic question would be to ask, "How many razor blades did you use last week?"

Concerning the form of questions, we can talk about two principal forms, viz., multiple choice questions and the open-end question. In the former the respondent selects one of the alternative possible answers put to him, whereas in the latter he has to supply the answer in his own words. The question with only two possible answers (usually 'Yes' or 'No') can be taken as a special case of the multiple choice question, or can be named as a 'closed question.' There are some advantages and disadvantages of each possible form of question. Multiple choice or closed questions have the advantages of easy handling, simple to answer, quick and relatively inexpensive to analyze. They are most amenable to statistical analysis. Sometimes, the provision of alternative replies helps to make clear the meaning of the question. But the main drawback of fixed alternative questions is that of "putting answers in people's mouths" i.e., they may force a statement of opinion on an issue about which the respondent does not in fact have any opinion. They are not appropriate when the issue under consideration happens to be a complex one and also when the interest of the researcher is in the exploration of a process. In such situations, open-ended questions which are designed to permit a free response from the respondent rather than one limited to certain stated alternatives are considered appropriate. Such questions give the respondent considerable latitude in phrasing a reply. Getting the replies in respondent's own

words is, thus, the major advantage of open-ended questions. But one should not forget that, from an analytical point of view, open-ended questions are more difficult to handle, raising problems of interpretation, comparability and interviewer bias.

In practice, one rarely comes across a case when one questionnaire relies on one form of questions alone. The various forms complement each other. As such questions of different forms are included in one single questionnaire. For instance, multiple-choice questions constitute the basis of a structured questionnaire, particularly in a mail survey. But even there, various open-ended questions are generally inserted to provide a more complete picture of the respondent's feelings and attitudes.

Researcher must pay proper attention to the wordings of questions since reliable and meaningful returns depend on it to a large extent. Since words are likely to affect responses, they should be properly chosen. Simple words, which are familiar to all respondents, should be employed. Words with ambiguous meanings must be avoided. Similarly, danger words, catch-words or words with emotional connotations should be avoided. Caution must also be exercised in the use of phrases which reflect upon the prestige of the respondent. Question wording, in no case, should bias the answer. In fact, question wording and formulation is an art and can only be learnt by practice.

Essentials of a Good Questionnaire:

To be successful, questionnaire should be comparatively short and simple i.e., the size of the questionnaire should be kept to the minimum. Questions should proceed in logical sequence moving from easy to more difficult questions. Personal and intimate questions should be left to the end. Technical terms and vague expressions capable of different interpretations should be avoided in a questionnaire. Questions may be dichotomous (yes or no answers), multiple choice

(alternative answers listed) or open-ended. The latter type of questions is often difficult to analyze and hence should be avoided in a questionnaire to the extent possible. There should be some control questions in the questionnaire which indicate the reliability of the respondent. For instance, a question designed to determine the consumption of particular material may be asked first in terms of financial expenditure and later in terms of weight. The control questions, thus, introduce a cross-check to see whether the information collected is correct or not. Questions affecting the sentiments of respondents should be avoided. Adequate space for answers should be provided in the questionnaire to help editing and tabulation. There should always be provision for indications of uncertainty, e.g., “do not know,” “no preference” and so on. Brief directions with regard to filling up the questionnaire should invariably be given in the questionnaire itself.

Finally, the physical appearance of the questionnaire affects the cooperation the researcher receives from the recipients and as such an attractive looking questionnaire, particularly in mail surveys, is a plus point for enlisting cooperation.

The quality of the paper, along with its color, must be good so that it may attract the attention of recipients

A great deal of questionnaires contains a mixture of both. Most contain a number of questions on simple nominal background variables (e.g., gender), which are fixed alternative, and a number of other closed -ended questions (agree/disagree or yes/no). They may also contain many open-ended thought questions. A questionnaire containing primarily fixed-alternative questions should contain at least one open-ended question (at the end of the questionnaire) to determine whether anything of importance to the respondent has been omitted.

In view Bailey (1982:128), the basic rule for writing answer categories is to provide all possible answers in as clear and uncluttered a fashion as possible. The means of answering the question (check a box, circle a number) should be explicit.

- **Nominal scales.** For nominal questions with factual answers (as opposed to opinion), the general practice is to list each alternative, providing a blank, a box to be checked, or a number to be circled.

For example:

Check the appropriate blank

1. Sex: Male X ; Female _____

2. What type of car do you drive? Ford _____ Toyota _____ Mitsubishi _____

Check the appropriate box

Similarly made

Circle the appropriate number

1. Sex: male 1; Female 2

- **Inventory method.** Another response category called inventory method is also used. An inventory is list of items to be checked or marked by the respondent. For example:

Check all the ways in which you have learned some bit of news or information in the last week.

_____ Television

_____ Radio

_____ Newspaper

_____ magazine

_____ word of mouth

_____ Other (please specify)

- **Grid format** The box format, often called a grid, is frequently used with inventories. According to Bailey (1982: 131), a grid is a boxed format for an inventory that provides an evaluation for each item, or may even be a two-way inventory.

Figure 6.1. A Grid Gathering Information on Both the type of Illness and Type of Treatment.

	Nose Drops	Ches t Rub	Gargl e	Inhalan ts	Throa t spray s	syrup	Throa t candy	Throa t Table ts	Coug h medic ine	
Chest cough										
Dry cough										

Smoker's cough										
Severe cough										
Sinus pains										
Common cold										
Sore throat										
Infected tonsils										
Dry throat										

Source: Kenneth D. Bailey, *methods of social Research*, 2nd ed., 1982, P. 132

- **Ordinal/ Likert scales.** A response mode for such questions could be illustrated as follows. Mathematics is essential for all business studies students: Strongly agree ☐ agree ☐ uncertain ☐ Disagree ☐ strongly disagree ☐

It is often desirable, where possible, to construct the same answer format for a whole series of question. If this can be done, one set of response category labels can serve for a whole set of categories if the labels are placed above the categories like titles. For example

	Agree	Disagree
1. If you start trying to change things very much, you usually make them worse.	_____	_____
2. All groups can live in harmony in this country without changing the system in any way	_____	_____

The obvious advantage of such a design is that the instructions for completing all questions in the series can be stated only once, at the beginning, and need not be repeated. Generally not all questions in the questionnaire will have the same response series. But often there will be several different sets of fixed-alternative questions, each set having different set of categories. Levels depending on the nature of the study and the researcher's interest. Some of the commonly used response categories include the following:

1. Strongly agree / agree/ neutral/ disagree/strongly disagree/unable to answer.

2. Excellent/adequate/barely adequate/inadequate/terrible/unable to answer.
3. Excellent /good /all right /poor /bad /unable to answer
4. Often/ sometimes/ almost never
5. Radical left /very liberal /somewhat liberal /middle/somewhat conservative / very conservative/radical right.
6. Certainly true /quite often true/ seldom true/never true/ don't know
7. Very important/ important/ somewhat important/ not important/ don't know.

- **Semantic differential responses.** In this case, a list of responses as a continuum with labels only at the extremes can be used.

Examples:

1. To what extent do you feel students should have a voice in determine course content and degree requirements?

Students should make
The final decisions
About curriculum
Matters

Curriculum matters
should be left
entirely to
instructors.

1 1 1 1 1 1 1 1 1 1
0 1 2 3 4 5 6 7 8 9

2. Some people like to see their good friends very often, others really only seldom like to see people. Relatively speaking, do you like to see your friends very frequently or very seldom? (CIRCLE THE APPROPRIATE NUMBER)

Very Seldom 1 1 1 1 1 1 1 frequently Very
1 2 3 4 5 6 7

- **Ranked responses.**

Another response category format for designing questions is to present a list of topics and have the respondent rank-order them.

Examples.

1. The following are some of the problems faced by citizens of Addis Ababa. Please order them in terms of importance, from 1 (most important) to 5 (least important).

___ Smog

___ Traffic

___ Taxes

___ Crime

___ Drug Addiction

The key to writing a good ranking item is to make sure your directions are complete and that the criteria for the ranking are clearly specified. It is also quite important to keep the list of items to be ranked no longer than ten items, to keep them all on the one page, and to make clearer whether you want all items ranked or just, say, the top five.

- **Interval scales.** These include the questions of the form:

1. What is your age? 10-14 ☐ 15-19 ☐ 20- 24 ☐
2. What is your daily income? Below 5 Birr ☐ 6-10 Birr ☐ 11-15 Birr ☐ Over 15 Birr ☐

Cover Letter or Introductory statement of a Questionnaire.

After the questions have been written with a reasonable level of wording and their order decided upon, the remaining tasks in questionnaire construction consists of writing an introductory statement or cover letter. This is very important part of a questionnaire construction because it justifies the study to the respondent and often determines whether she/he cooperates or not. As such, the introductory statement should be concise, courteous and businesslike.

The cover letter is usually written on the letterhead of the organization conducting or sponsoring the survey in order to help legitimize the survey to be conducted to the respondent. In addition, the introductory statement should:

- (1) state the purpose of the study and its significance;
- (2) explain who the data collector is, the basis of its authority, and why it is conducting the study;
- (3) tell how and why the respondents were selected;
- (4) explain why their answers are important;
- (5) tell how to complete the form and list the person to call if help is needed to complete the form;
- (6) provide assurance of confidentiality and anonymity when appropriate;
- (7) explain how the data will be used;
- (8) explain who will have access to the information;
- (9) Provide mail-back instructions (if necessary); and
- (10) Present the response efforts as a favor and thank the respondents for their cooperation.

Below is an example of introductory statement, which has been extracted from "Effective Management" in school's project" in UK:

Dear Respondent,

The aim of this study is to identify examples of management structures and processes in individual schools which staff of these schools has recognized as effective practice.

The investigation has who main phases:

- the present questionnaire survey to obtain heads' and teachers' views;
- case studies in a selection of schools using interviews with heads and staff to explore the issue in more depth.

The purpose of this questionnaire is to obtain your perceptions and views on various aspects of management in the school. It forms a major part of the project and the information you give will

enable us to establish a clear picture of teachers' views of school management. Your cooperation to responds is very important to this survey because it represents hundreds of others who are not included in our sample.

Please answer every question. The first section of the questionnaire seeks basic factual information where answer should be writ in the space provided or circled to indicate the appropriate response.

The rest of the questionnaire has been designed as a series of statements where your agreement/disagreement can be indicated by circling the appropriate number. Please answer each question by circling the number which most closely represents your opinion using the following 5 points scale:

5= Strongly Agree, 4= agree, 3= don't know,
2= Disagree, 1= strongly disagree.

Space is provided at the end of each section for you to add further comments or explanation. We would stress that all in information you provide will be treated in the strictest confidence.

We thank you very much for your cooperation

6.2.2. COLLECTION OF DATA THROUGH INTERVIEW

The interview method of collecting data involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses. This method can be used through **personal interviews** and, if possible, through **telephone interviews**.

(a) *Personal interviews*: Personal interview method requires a person known as the interviewer asking questions generally in a face-to-face contact to the other person or persons. (At times the interviewee may also ask certain questions and the interviewer responds to these, but usually the interviewer initiates the interview and collects the information.) This sort of interview may be in the form of direct personal investigation or it may be indirect oral investigation. In the case of

direct personal investigation the interviewer has to collect the information personally from the sources concerned. He has to be on the spot and has to meet people from whom data have to be collected. This method is particularly suitable for intensive investigations. But in certain cases it may not be possible or worthwhile to contact directly the persons concerned or on account of the extensive scope of enquiry, the direct personal investigation technique may not be used. In such cases an indirect oral examination can be conducted under which the interviewer has to cross-examine other persons who are supposed to have knowledge about the problem under investigation and the information, obtained is recorded. Most of the commissions and committees appointed by government to carry on investigations make use of this method.

The method of collecting information through personal interviews is usually carried out in a structured way. As such we call the interviews as *structured interviews*. Such interviews involve the use of a set of predetermined questions and of highly standardized techniques of recording. Thus, the interviewer in a structured interview follows a rigid procedure laid down, asking questions in a form and order prescribed. As against it, the *unstructured interviews* are characterized by a flexibility of approach to questioning. Unstructured interviews do not follow a system of pre-determined questions and standardized techniques of recording information. In a non-structured interview, the interviewer is allowed much greater freedom to ask, in case of need, supplementary questions or at times he may omit certain questions if the situation so requires. He may even change the sequence of questions. He has relatively greater freedom while recording the responses to include some aspects and exclude others. But this sort of flexibility results in lack of comparability of one interview with another and the analysis of unstructured responses becomes much more difficult and time-consuming than that of the structured responses obtained in case of structured interviews. Unstructured interviews also demand deep knowledge and greater skill on the part of the interviewer. Unstructured interview, however, happens to be the central technique of collecting information in case of exploratory or formulative research studies. But in case of descriptive studies, we quite often use the technique of structured interview because of its being more economical, providing a safe basis for generalization and requiring relatively lesser skill on the part of the interviewer.

Despite the variations in interview-techniques, the major ***advantages*** and ***weaknesses of personal interviews*** can be enumerated in a general way as follows:

- (i) More information and that too in greater depth can be obtained.
- (ii) Interviewer by his own skill can overcome the resistance, if any, of the respondents; the interview method can be made to yield an almost perfect sample of the general population.
- (iii) There is greater flexibility under this method as the opportunity to restructure questions is always there, especially in case of unstructured interviews.
- (iv) Observation method can as well be applied to recording verbal answers to various questions.
- (v) Personal information can as well be obtained easily under this method.
- (vi) Samples can be controlled more effectively as there arises no difficulty of the missing returns; non-response generally remains very low.
- (vii) The interviewer can usually control which person(s) will answer the questions. This is not possible in mailed questionnaire approach. If so desired, group discussions may also be held.
- (viii) The interviewer may catch the informant off-guard and thus may secure the most spontaneous reactions than would be the case if mailed questionnaire is used.
- (ix) The language of the interview can be adopted to the ability or educational level of the person interviewed and as such misinterpretations concerning questions can be avoided.
- (x) The interviewer can collect supplementary information about the respondent's personal characteristics and environment which is often of great value in interpreting results.

But there are also certain weaknesses of the interview method. Among the important weaknesses, mention may be made of the following:

- (i) It is a very expensive method, especially when large and widely spread geographical sample is taken.
- (ii) There remains the possibility of the bias of interviewer as well as that of the respondent; there also remains the headache of supervision and control of interviewers.
- (iii) Certain types of respondents such as important officials or executives or people in high income groups may not be easily approachable under this method and to that extent the data may prove inadequate.

- (iv) This method is relatively more-time-consuming, especially when the sample is large and recalls upon the respondents are necessary.
- (v) The presence of the interviewer on the spot may over-stimulate the respondent, sometimes even to the extent that he may give imaginary information just to make the interview interesting.
- (vi) Under the interview method the organization required for selecting, training and supervising the field-staff is more complex with formidable problems.
- (vii) Interviewing at times may also introduce systematic errors.
- (viii) Effective interview presupposes proper rapport with respondents that would facilitate free and frank responses. This is often a very difficult requirement.

(b) *Telephone interviews:* This method of collecting information consists in contacting respondents on telephone itself. It is not a very widely used method, but plays important part in industrial surveys, particularly in developed regions. The chief merits of such a system are:

1. It is more flexible in comparison to mailing method.
2. It is faster than other methods i.e., a quick way of obtaining information.
3. It is cheaper than personal interviewing method; here the cost per response is relatively low.
4. Recall is easy; callbacks are simple and economical.
5. There is a higher rate of response than what we have in mailing method; the non-response
 1. is generally very low.
6. Replies can be recorded without causing embarrassment to respondents.
7. Interviewer can explain requirements more easily.
8. At times, access can be gained to respondents who otherwise cannot be contacted for one reason or the other.
9. No field staff is required.
10. Representative and wider distribution of sample is possible.

But this system of collecting information is not free from demerits. Some of these may be highlighted.

1. Little time is given to respondents for considered answers; interview period is not likely to exceed five minutes in most cases.

2. Surveys are restricted to respondents who have telephone facilities.
3. Extensive geographical coverage may get restricted by cost considerations.
4. It is not suitable for intensive surveys where comprehensive answers are required to various questions.
5. Possibility of the bias of the interviewer is relatively more.
6. Questions have to be short and to the point; probes are difficult to handle.

6.2.4. COLLECTION OF DATA THROUGH OBSERVATION

The observation method is the most commonly used method especially in studies relating to behavioral sciences. In a way we all observe things around us, but this sort of observation is not scientific observation. Observation becomes a scientific tool and the method of data collection for the researcher, when it serves a formulated research purpose, is systematically planned and recorded and is subjected to checks and controls on validity and reliability. Under the observation method, the information is sought by way of investigator's own direct observation without asking from the respondent. For instance, in a study relating to consumer behaviour, the investigator instead of asking the brand of wrist watch used by the respondent, may himself look at the watch.

The main advantage of this method is that subjective bias is eliminated, if observation is done accurately. Secondly, the information obtained under this method relates to what is currently happening; it is not complicated by either the past behaviour or future intentions or attitudes. Thirdly, this method is independent of respondents' willingness to respond and as such is relatively less demanding of active cooperation on the part of respondents as happens to be the case in the interview or the questionnaire method. This method is particularly suitable in studies which deal with subjects (i.e., respondents) who are not capable of giving verbal reports of their feelings for one reason or the other.

However, observation method has various limitations. Firstly, it is an expensive method. Secondly, the information provided by this method is very limited. Thirdly, sometimes unforeseen factors may interfere with the observational task. At times, the fact that some people are rarely accessible to direct observation creates obstacle for this method to collect data effectively.

While using this method, the researcher should keep in mind things like: What should be observed? How the observations should be recorded? Or how the accuracy of observation can be ensured? In case the observation is characterized by a careful definition of the units to be observed, the style of recording the observed information, standardized conditions of observation and the selection of pertinent data of observation, then the observation is called as *structured observation*. But when observation is to take place without these characteristics to be thought of in advance, the same is termed as *unstructured observation*. Structured observation is considered appropriate in descriptive studies, whereas in an exploratory study the observational procedure is most likely to be relatively unstructured.

We often talk about participant and non-participant types of observation in the context of studies, particularly of social sciences. This distinction depends upon the observer's sharing or not sharing the life of the group he is observing. If the observer observes by making himself, more or less, a member of the group he is observing so that he can experience what the members of the group experience, the observation is called as the *participant observation*. But when the observer observes as a detached emissary without any attempt on his part to experience through participation what others feel, the observation of this type is often termed as *non-participant observation*. (When the observer is observing in such a manner that his presence may be unknown to the people he is observing, such an observation is described as *disguised observation*.)

There are several merits of the participant type of observation: (i) The researcher is enabled to record the natural behavior of the group. (ii) The researcher can even gather information which could not easily be obtained if he observes in a disinterested fashion. (iii) The researcher can even verify the truth of statements made by informants in the context of a questionnaire or a schedule. But there are also certain demerits of this type of observation viz., the observer may lose the objectivity to the extent he participates emotionally; the problem of observation-control is not solved; and it may narrow-down the researcher's range of experience.

Sometimes we talk of *controlled* and *uncontrolled observation*. If the observation takes place in the natural setting, it may be termed as uncontrolled observation, but when observation takes place according to definite pre-arranged plans, involving experimental procedure, the same is then

termed controlled observation. In non-controlled observation, no attempt is made to use precision instruments.

The major aim of this type of observation is to get a spontaneous picture of life and persons. It has a tendency to supply naturalness and completeness of behavior, allowing sufficient time for observing it. But in controlled observation, we use mechanical (or precision) instruments as aids to accuracy and standardization. Such observation has a tendency to supply formalized data upon which generalizations can be built with some degree of assurance. The main pitfall of non-controlled observation is that of subjective interpretation. There is also the danger of having the feeling that we know more about the observed phenomena than we actually do. Generally, controlled observation takes place in various experiments that are carried out in a laboratory or under controlled conditions, whereas uncontrolled observation is resorted to in case of exploratory researches.

6.2.5. COLLECTION OF DATA THROUGH FOCUS GROUP DISCUSSION (FGD)

With origins in sociology, focus group discussion has become widely applicable in business research. A focus group discussion is a discussion made by a panel of 8 to 12 respondents led by a trained moderator. The moderator uses group dynamics principles to focus or guide the group in an exchange of ideas, feelings, and experiences on a clearly understood topic. The output of the session is a list of ideas and behavioral observations with recommendations of the moderator.

The qualitative data obtained from group interview might be used for quantitative testing. Particularly, in exploratory research, the qualitative data that focus groups produce may be used for enriching all levels of research questions and hypotheses and comparing the effectiveness of design options.

Qualities of a moderator:

The moderator should be equipped with sufficient skill so that he/she can maintain a high degree of interaction among group members. Unskilled moderators typically find themselves conducting individual interviews with each of the participants rather than stimulating interaction within the group. It is only with interaction the focus group discussion can:

- Provide the desired spontaneity of response by participants,
- Produce the degree of emotional involvement essential to produce "depth" level responses, and
- Produce the kind and degree of rapport which facilitates a "give and take " exchange of attitudinal and behavioral information.

The key qualifications for moderator include the following

1. **Kindness with firmness.** In order to elicit necessary interaction, the moderator must combine a disciplined detachment with understanding empathy.
2. **Permissiveness.** While an atmosphere of permissiveness is desirable, the moderator must be all at all times alert to indications that the group atmosphere of cordiality disintegrating.
3. **Involvement.** Since the principal reason for the group interview is to expose feelings and to obtain reactions indicative of deeper feelings, the moderator must encourage and stimulate intensive personal involvement.
4. **Incomplete Understanding.** The most useful skill of the group moderator is his or her ability to convey lack of complete understanding of the information being presented.
5. **Encouragement.** Although the dynamics of the group situation facilitate the participation of all members in the interaction, there may be individuals who resist contributing.
6. **Flexibility.** The moderator should be equipped prior to the session with a topic outline of the subject matter to be covered. By committing the topics to memory before the interview, the moderator may use the outline only as a reminder of content areas omitted or covered incompletely.
7. **Sensitivity.** The moderator must be able to identify, as the group interview progresses, the informational level on which it is being conducted, and determine if it is appropriate for the subject under discussion. Sensitive areas will frequently produce superficial rather than deep responses. Depth is achieved when there is a substantial amount of emotional response, as opposed to intellectual information indications of depth are provided when participants begin to indicate how they feel about the subject, rather than what they think about it

Benefits of Focus Group Discussion.

If properly used, group interview does have the following contributions:

1. **Synergism.** The combined effect of the group will produce a wider range of information, insight, and ideas than will the accumulation of the responses of a number of individuals when these replies are secured privately.
2. **Snowballing.** A bandwagon effect often operates in a group discussion situation in that a comment by one individual often triggers a chain of responses from the other participants.
3. **Stimulation.** Usually after a brief introductory period the responders get “turned on” in that they want to express their ideas and expose their feelings as the general level excitement over the topic increases in the group.
4. **Security.** The participants can usually find comfort in the group in that their feelings are not greatly different from other participants and they are more willing to express their ideas and feelings.
5. **Spontaneity.** Since individuals aren't required to answer any question in a group interview, their responses can be more spontaneous and less conventional, and should provide a more accurate picture of their position on some issues.
6. **Serendipity.** It is more often the case in a group rather than individual interview that some idea will drop out the clue.
7. **Specialization.** The group interview allows the use of a more highly trained, but more expensive, interviewer since a number of individuals are being “interviewed” simultaneously.
8. **Scientific Scrutiny.** The group interview allows closer scrutiny of the data collection process in that several observers can witness the session and it can be recorded for later playback and analysis.
9. **Structure.** The group interview affords more flexibility than the individual interview with regard to the topics covered and the depth with which they are treated.
10. **Speed.** Since a number of individuals are being interviewed at the same time, the group interview speeds up data collection and analysis process.

6.2.6. COLLECTION OF DATA THROUGH CASE STUDY METHOD

The case study method is a very popular form of qualitative analysis and involves a careful and complete observation of a social unit, be that unit a person, a family, an institution, a cultural group or even the entire community. It is a method of study in depth rather than breadth. The case

study places more emphasis on the full analysis of a limited number of events or conditions and their interrelations. The case study deals with the processes that take place and their interrelationship. Thus, case study is essentially an intensive investigation of the particular unit under consideration. The object of the case study method is to locate the factors that account for the behavior-patterns of the given unit as an integrated totality. According to H. Odum, “The case study method is a technique by which individual factor whether it be an institution or just an episode in the life of an individual or a group is analyzed in its relationship to any other in the group” Thus, a fairly exhaustive study of a person (as to what he does and has done, what he thinks he does and had done and what he expects to do and says he ought to do) or group is called a life or case history.

In brief, we can say that case study method is a form of qualitative analysis where in careful and complete observation of an individual or a situation or an institution is done; efforts are made to study each and every aspect of the concerning unit in minute details and then from case data generalizations and inferences are drawn.

6.3. COLLECTION OF SECONDARY DATA

Secondary data means data that are already available i.e., they refer to the data which have already been collected and analyzed by someone else. When the researcher utilizes secondary data, then he has to look into various sources from where he can obtain them. In this case he is certainly not confronted with the problems that are usually associated with the collection of original data.

Secondary data may either be published data or unpublished data. Usually published data are available in: (a) various publications of the central, state or local governments; (b) various publications of foreign governments or of international bodies and their subsidiary organizations; (c) technical and trade journals; (d) books, magazines and newspapers; (e) reports and publications of various associations connected with business and industry, banks, stock exchanges, etc.; (f) reports prepared by research scholars, universities, economists, etc. in different fields; and (g) public records and statistics, historical documents, and other sources of published information.

The sources of unpublished data are many; they may be found in diaries, letters, unpublished biographies and autobiographies and also may be available with scholars and research workers, trade associations, labor bureaus and other public/ private individuals and organizations.

Researcher must be very careful in using secondary data. He must make a minute scrutiny because it is just possible that the secondary data may be unsuitable or may be inadequate in the context of the problem which the researcher wants to study. In this connection Dr. A.L. Bowley very aptly observes that it is never safe to take published statistics at their face value without knowing their meaning and limitations and it is always necessary to criticize arguments that can be based on them. By way of caution, the researcher, before using secondary data, must see that they possess following characteristics:

1. **Reliability of data:** The reliability can be tested by finding out such things about the said data: (a) Who collected the data? (b) What were the sources of data? (c) Were they collected by using proper methods (d) At what time were they collected? (e) Was there any bias of the compiler? (f) What level of accuracy was desired? Was it achieved?
2. **Suitability of data:** The data that are suitable for one enquiry may not necessarily be found suitable in another enquiry. Hence, if the available data are found to be unsuitable, they should not be used by the researcher. In this context, the researcher must very carefully scrutinize the definition of various terms and units of collection used at the time of collecting the data from the primary source originally. Similarly, the object, scope and nature of the original enquiry must also be studied. If the researcher finds differences in these, the data will remain unsuitable for the present enquiry and should not be used.
3. **Adequacy of data:** If the level of accuracy achieved in data is found inadequate for the purpose of the present enquiry, they will be considered as inadequate and should not be used by the researcher. The data will also be considered inadequate, if they are related to an area which may be either narrower or wider than the area of the present enquiry.

From all this we can say that it is very risky to use the already available data. The already available data should be used by the researcher only when he finds them **reliable, suitable** and **adequate**. But he should not blindly discard the use of such data if they are readily available from authentic sources and are also suitable and adequate for in that case it will not be economical to spend time and energy in field surveys for collecting information. At times, there may be wealth of usable information in the already available data which must be used by an intelligent researcher but with due precaution.

6.4. SELECTION OF APPROPRIATE METHOD FOR DATA COLLECTION

Thus, there are various methods of data collection. As such the researcher must judiciously select the method/methods for his own study, keeping in view the following factors:

- 1. Nature, scope and object of enquiry:** The method selected should be such that it suits the type of enquiry that is to be conducted by the researcher. This factor is also important in deciding whether the data already available (secondary data) are to be used or the data not yet available (primary data) are to be collected.
- 2. Availability of funds:** When funds at the disposal of the researcher are very limited, he will have to select a comparatively cheaper method which may not be as efficient and effective as some other costly method. Finance, in fact, is a big constraint in practice and the researcher has to act within this limitation.
- 3. Time factor:** Some methods take relatively more time, whereas with others the data can be collected in a comparatively shorter duration. The time at the disposal of the researcher, thus, affects the selection of the method by which the data are to be collected.
- 4. Precision required:** Precision required is yet another important factor to be considered at the time of selecting the method of collection of data. But one must always remember that each method of data collection has its uses and none is superior in all situations. For instance, telephone interview method may be considered appropriate (assuming telephone population) if funds are restricted, time is also restricted and the data is to be collected in respect of few items with or without a certain degree of precision. In case funds permit and more information is desired, personal interview method may be said to be relatively better. In case time is ample, funds are limited and much information is to be gathered with no precision, then mail-

questionnaire method can be regarded more reasonable. When funds are ample, time is also ample and much information with no precision is to be collected, then either personal interview or the mail-questionnaire or the joint use of these two methods may be taken as an appropriate method of collecting data. Where a wide geographic area is to be covered, the use of mail-questionnaires supplemented by personal interviews will yield more reliable results per dollar spent than either method alone.

Thus, the most desirable approach with regard to the selection of the method depends on the nature of the particular problem and on the time and resources (money and personnel) available along with the desired degree of accuracy. But, over and above all this, much depends upon the ability and experience of the researcher. Dr. A.L. Bowley's remark in this context is very appropriate when he says that "in collection of statistical data common sense is the chief requisite and experience the chief teacher."

UNIT EIGHT

THE RESEARCH REPORT

The results of research can be presented in two ways – oral and written.

- ORAL: The oral report is quite simple the researcher simply presents verbally the summary of his report from the beginning of the research to the end. It is similar to written

report, the major difference however is that the written report may be more comprehensive and durable.

➤ **THE WRITTEN RESEARCH REPORT**

This is a documented report.

NEED FOR A REPORT

A study can be destroyed by a poor final report or presentation. Research technicians appreciate the brilliance of good reports and will be influenced by the quality of the reporting. This fact should prompt researchers to make special effort to communicate clearly and fully.

The research report contains findings, analysis of findings, interpretations, conclusions, and sometimes recommendations. The researcher is the expert on the topic and knows the specifics in a way no one else can. Because a research report is an authoritative one-way communication, it imposes a special obligation for maintaining objectivity. Even if your findings seem to point to an action, you should demonstrate restraint and caution when proposing that course of action. Your language should be appealing.

TYPES OF REPORTS

Reports may be defined in terms of their degree of formality and design. The formal report follows a well-delineated and longer format. This contrasts to the more informal or short report.

(1) SHORT REPORTS

Short reports are appropriate when the problem is well defined, or of limited scope and has a simple and straightforward methodology. Most informational, progress and interim reports are of this kind: a report of cost-of-living changes for upcoming labour negotiations or a report of progress made at a phase of a long project.

Short reports are about five pages. At the beginning, there should be a brief statement on the authorization for the study, the problem examined, and its breadth and depth. Next are the

conclusions and recommendations followed by the findings that support them. Section headings should be used.

Detailed information on the research method would be omitted, although an overview could appear in an appendix. The purpose of this type of report is to distribute information quickly in an easy-to-use format. Short reports are also produced for clients with small, relatively inexpensive research projects.

(2) LONG REPORTS

Long reports are two types, the technical or base report and the management report. The choice depends on the audience and the researcher's objectives.

Many projects will require both types of reports: a technical report, written for an audience of researchers, and a management report, written for the non-technically oriented client. While some researchers try to write a single report that satisfies both needs, this complicates the task and is seldom satisfactory. The two types of audiences have different technical training, interests, and goals.

(a) The Technical Report. This report should include full documentation and detail. It will normally survive all working papers and original data files and so will become the major source document. It is the report that others researchers will want to see because it has the full story of what was done and how it was done.

While completeness is a goal, you must guard against including nonessential material. A good guide is that sufficient procedural information should be included to enable others to replicate the study. This includes sources of data, research procedures, sampling design, data gathering instruments, index construction, and data analysis methods.

(b) The Management Report. Some times the client has no research background and is interested in results rather than methodology. The major communication medium in this case is the management report. It is still helpful to have a technical report if the client later wishes to have a technical appraisal of the study.

Because the management report is designed for a non-technical audience, the researcher faces some special problems. Readers are less concerned with methodological details but more interested in learning quickly the major findings and conclusions. They want help in making decisions. Often the report is developed for a single person and needs to be written with that person's characteristics and needs in mind.

COMPONENTS OF RESEARCH REPORT

You must carefully read your course information details to ensure that you comply with what the lecturer/tutor stipulates. A report is typically made up of three main divisions:

- (1) Preliminary*
- (2) Body and*
- (3) Supplementary.*

Each of the sections contains a different kind of content. Refer to the Tables below:

Table 1: Divisions and sections of a report

Broad Divisions	Individual Sections
(1) Preliminary material	Title of Report
	Approval of certificate page
	Acknowledgement
	Table of Contents
	Table of tables and figures
	List of acronyms/abbreviation/glossary
	Abstract/Synopsis
(2) Body of report	Introduction ...
	Literature Review
	Methodology
	Presentation, analysis and interpretations
	Results/findings

(3) Supplementary material	Conclusion
	Recommendations
	References or Bibliography
	Appendices

Table 2: Content of individual sections

Individual Sections	Content of Each Section
Title of Report	Concise heading indicating what the report is about
Approval of certificate page	Entail the name and signature of students, advisor and examiner
Acknowledgement (Optional)	Thank to other people that have helped
Table of Contents	List of major sections and headings with page numbers
Table of tables and figures	All tables and figures developed by the researcher and taken from the secondary source
Abstract/Synopsis	Concise summary of main findings
Introduction	Why and what you researched
Literature Review	Other relevant research in this area
Methodology	What you did and how you did it
Results/findings	What you found
Conclusion	Summary of results/findings
Recommendations	What needs to be done as a result of your findings
References or Bibliography	All references used in your report or referred to for background information
Appendices	Any additional material which will add to your report

- **Title of Report** - Make sure this is clear and indicates exactly what you are researching.
- **Table of Contents** - List all sections, sub headings tables/graphs appendices and give page numbers for each.

- ***Abstract/Synopsis*** - This gives a very brief overview of the report in a condensed form. For more specific details on how to write this, please refer to the Learning Guide Writing *an Abstract*.
- ***Introduction*** - The purpose of your report. The thesis statement will be useful here. Background information may include a brief review of the literature already available on the topic so that you are able to 'place' your research in the field. Some brief details of your methods and an outline of the structure of the report.
- ***Literature Review*** - If asked to do a separate literature review, you must carefully structure your findings. It may be useful to do a chronological format where you discuss from the earliest to the latest research, placing your research appropriately in the chronology. Alternately, you could write in a thematic way, outlining the various themes that you discovered in the research regarding the topic. Again, you will need to state where your research fits.
- ***Methodology*** - Here you clearly outline what methodology you used in your research i.e. what you did and how you did it. It must be clearly written so that it would be easy for another researcher to duplicate your research if they wished to.
 - It is usually written in a 'passive' voice (e.g. the participants were asked to fill in the questionnaire attached in Appendix 1) rather than an 'active' voice (e.g. I asked the participants to fill in the questionnaire attached in Appendix 1).
 - Clearly reference any material you have used from other sources. Clearly label and number any diagrams, charts, and graphs. Ensure that they are relevant to the research and add substance to the text rather than just duplicating what you have said. You do not include or discuss the results here.
- ***Results*** - This is where you indicate what you found in your research. You give the results of your research, but do not interpret them.
- ***Discussion*** - This is where you discuss the relevance of your results and how your findings fit with other research in the area. It will relate back to your literature review and your introductory thesis statement.

- **Conclusion** - This is a summary of the most significant results/findings. You should not include any new material in this section. Sometimes you could indicate some areas where your research has limits or where further research would be useful.
- **Recommendations** - This includes suggestions for what needs to be done as a result of your findings. Recommendations are usually listed in order of priority.
- **References or Bibliography** - This includes all references used in your report or referred to for background information. This must be done using the referencing convention specified by your lecturer/tutor.
- **Appendices** - These should add extra information to the report. If you include appendices they must be referred to in the body of the report and must have a clear purpose for being included. Each appendix must be named and numbered.