Research Methods (STA630)

Contents

Lesson 1: INTRODUCTION, DEFINITION & VALUE OF RESEARCH

Whether we are aware of it or not, we are surrounded by research. Educators, administrators, government officials, business leaders, human service providers, health care professionals, regularly use social research findings in their jobs. Social research can be used to raise children, reduce crime, improve public health, sell products, improve workers' efficiency, or just understand one's life.

Assume for a moment that you are the Manager of a restaurant. You are experiencing a significant turn over in your waiter/waitress pool, and long-time customers have been commenting that the friendly atmosphere that has historically drawn them to your door is changing. What will you do? Where will you try to solve this problem? The problem of high turnover and decline in the friendly atmosphere at the restaurant has to be researched.

The study of research methods provides you with the knowledge and skills you need to solve the problem and meet the challenges of a fast-paced decision-making environment. A systematic inquiry whose objective is to provide information to the problems (be they managerial as in our example) is one way to explain research.

What is Research?

General image of the research is that it has something to do with the laboratory where scientists are supposedly doing some experiments. Somebody who is interviewing consumers to find out their opinion about the new packaging of milk is also doing research. **Research is simply the process of finding solutions to a problem after through study and analysis of the situational factors. It is gathering information needed to answer a question, and thereby help in solving a problem.** We do not do study in any haphazard manner. Instead we try to follow a system or a procedure in an organized manner. It is all the more necessary in case we want to repeat the study, or somebody else wants to verify our findings. In the latter case the other person has to follow the same procedure that we followed. Hence not only we have to do the study in a systematic manner but also that system should be known to others.

What is the value of Research?

The nature of research problems could vary. Problems may refer to some undesirable situation or these may refer to simply a curiosity of the researcher that may be agitating his or her mind. For example, in a recent BA/BS examination of the Punjab University 67 percent of the students failed. That is a colossal wastage of the resources, hence an undesirable situation that needs research to find a solution. The researcher may come up with a variety of reasons that may relate with the students, the teachers, the curricula, the availability of books, the examination system, the family environment of the student, and many more. So a study may be carried out to diagnose the situation, and the recommendations to be applied to overcome the undesirable situation of mass failure of students.

In the same examination result one finds that girls have captured a good number of top positions; and that is happening for the last couple of years. One gets curious and tries to do research for finding out the reasons. This is an academic problem but certainly a research problem. Conducting such **research offers the pleasure of solving a puzzle**. Why the girls are catching most of the top positions in different examination? This might be a puzzle that the

researcher may like to explain. Such findings make a good contribution to the body of knowledge i.e. making some good discoveries as part of the basic research. Finding answer to any enigma is self-satisfying.
The researchers try to make use of their findings for **generating theories and models** that could be used for understanding human behavior and the functioning of different structures both at the micro (organizational) and macro (societal) level.

Therefore, research may be considered as an *organized, systematic, data based, critical, objective, scientific inquiry or investigation into a specific problem*, undertaken with the purpose of finding answers or solutions to it. In this way research provides the needed information that guides the planners to make informed decisions to successfully deal with the problems. The information provided could be the result of a careful analysis of data gathered firsthand or of the data that are already available with an organization. .

The value of research for policy makers, planners, business managers, and other stakeholders is that it reduces uncertainty by providing information that improves the decision-making process. The decision making process associated with the development and implementation of a strategy involves four interrelated stages:

1. Identifying problems or opportunities;
2. Diagnosing and assessing problems or opportunities;
3. Selecting and implementing a course of action; and
4. Evaluating the course of action.

Identifying problems and solutions to the same problems is in fact applying the research findings to overcome an undesirable situation. Initially a problem may appear to be simply a 'tip of the iceberg' but the study by a professional might help locating the magnitude of the issue as well as its solutions. Such research is usually referred to as applied research, which shall be discussed in detail in the coming lectures.

Research helps in developing methodologies

By now we know that the researchers have to develop methodologies for carrying out the research. These methodologies are for the collection of data, data processing and data analysis. For the new researchers these methodologies are already available, most of the researchers just use these. Nevertheless, there is always a scope for improvement and certainly new methodologies are developed. Also we try to borrow methodologies from sister subjects.
Managers and administrators with knowledge of research have an advantage over those who are without. Though a manager/administrator him/herself may not be doing any major research yet he/she will have to understand, predict, and control events that are dysfunctional to the organization. For example, a new product developed may not be "taking off," or a financial investment may not be "paying off" as anticipated. Such disturbing phenomena have to be understood and explained. Unless this is done, it will not be possible to predict the future of that product or the prospects of that investment, and how future catastrophic outcomes can be controlled. A grasp of research methods will enable managers/administrators to understand, predict, and control their environment.
Managers may not be doing the research themselves, in fact they could hire the services of professionals, and still they should be well conversant with research methodologies. The manager who is knowledgeable about research can interact effectively with outside researchers

or consultants. Knowledge about research processes, design, and interpretation of data also helps managers to become discriminating recipients of the research findings presented, and to determine whether or not the recommended solution are appropriate for implementation.

We are surrounded by research

For the understanding of the professional works, incorporation of the new findings in the practical situations, and for the implementation of the recommendations in policy/planning, the managers have to be well conversant with researchers. Many of you may be preparing yourselves for such managerial positions, I am sure training in research methodology will certainly be helpful in your career.

Lesson 2: SCIENTIFIC METHOD OF RESEARCH & ITS SPECIAL FEATURES

Research produces knowledge which could be used for the solution of problems as well as for the generation of universal theories, principles and laws. But all knowledge is not science. The critical factor that separates scientific knowledge from other ways of acquiring knowledge is that it uses scientific approach. What is this approach? Or what is science?
When most people hear the word *science*, the first image that comes to mind is one of test tubes, computers, rocket ships, and people in white lab coats. These outward trappings are part of science. Some sciences, such as the natural sciences deal with the physical and material world. Some other sciences involve the study of people – their beliefs, behavior, interactions, attitudes, institutions, and so forth. They are sometimes called *soft sciences*. This is not that their work is sloppy or lack rigor but because their subject matter, human social life, is fluid, formidable to observe, and hard to measure precisely with laboratory instruments. The subject matter of a science (e.g. human attitudes, protoplasm, or galaxies) determines the techniques and instruments (e.g. surveys, microscopes, or telescopes) used by it.

Science is a way to produce knowledge, which is based on truth and attempts to be universal. In other words science is a method, a procedure to produce knowledge i.e. discovering universalities/principles, laws, and theories through the process of observation and re-observation. Observation here implies that scientists use "sensory experiences" for the study of the phenomena. They use their five senses, which are possessed by every normal human being. They not only do the observation of a phenomenon but also repeat the observation, may be several times. The researchers do so because they want to be accurate and definite about their findings.

Re-observation may be made by the same researcher at a different time and place or done by other professionals at some other time or place. All such observations are made in this universe where a normal professional human being can go, make the observation and come back. Therefore we are focusing on this universe not on the one hereafter. By repeating the observation, the researchers want to be definite and positive about their findings. Those who want to be definite and positive are often referred to as **positivists**. The researchers do not leave their findings into scattered bits and pieces. Rather the results are organized, systematized, and made part of the existing body of knowledge; and this is how the knowledge grows. All this procedure for the creation of knowledge is called a scientific method, whereby the consequent knowledge may be referred to as scientific knowledge. In this way *science* refers to both a system for producing knowledge and the knowledge produced from that system. Since the subject matters of the researchers differ, therefore, we have the diversification of different sciences: broadly natural or physical sciences and human sciences.

Important Characteristics of Scientific Method

1. Empirical

Scientific method is concerned with the realities that are observable through "sensory experiences." It generates knowledge which is verifiable by experience or observation. Some of the realities could be directly observed, like the number of students present in the class and how many of them are male and how many female. The same students have attitudes, values, motivations, aspirations, and commitments. These are also realities which cannot be observed

directly, but the researchers have designed ways to observe these indirectly. Any reality that cannot be put to "sensory experience" directly or indirectly (existence of heaven, the Day of Judgment, life hereafter, God's rewards for good deeds) does not fall within the domain of scientific method.

2. Verifiable

Observations made through scientific method are to be verified again by using the senses to confirm or refute the previous findings. Such confirmations may have to be made by the same researcher or others. We will place more faith and credence in those findings and conclusions if similar findings emerge on the basis of data collected by other researchers using the same methods. To the extent that it does happen (i.e. the results are replicated or repeated) we will gain confidence in the scientific nature of our research. Replicability, in this way, is an important characteristic of scientific method. Hence revelations and intuitions are out of the domain of scientific method.

3. Cumulative

Prior to the start of any study, the researchers try to scan through the literature and see that their study is not a repetition in ignorance. Instead of reinventing the wheel, the researchers take stock of the existing body of knowledge and try to build on it. Also the researchers do not leave their research findings into scattered bits and pieces. Facts and figures are to be provided with language and thereby inferences drawn. The results are to be organized and systematized. Nevertheless, we don't want to leave our studies as stand alone. A linkage between the present and the previous body of knowledge has to be established, and that is how the knowledge accumulates. Every new crop of babies does not have to start from a scratch; the existing body of knowledge provides a huge foundation on which the researchers build on and hence the knowledge keeps on growing.

4. Deterministic

Science is based on the assumption that all events have antecedent causes that are subject to identification and logical understanding. For the scientist, nothing "just happens" – it happens for a reason. The scientific researchers try to explain the emerging phenomenon by identifying its causes. Of the identified causes which ones can be the most important? For example, in the 2006 BA/BS examination of the Punjab University 67 percent of the students failed. What could be the determinants of such a mass failure of students? The researcher may try to explain this phenomenon and come up with variety of reasons which may pertain to students, teachers, administration, curriculum, books, examination system, and so on. Looking into such a large number of reasons may be highly cumbersome model for problem solution. It might be appropriate to tell, of all these factors which one is the most important, the second-most important, the third-most important, which two in combination are the most important. The researcher tries to narrow down the number of reasons in such a way that some action could be taken. Therefore, the achievement of a meaningful, rather than an elaborate and cumbersome, model for problem solution becomes a critical issue in research. That is parsimony which implies the explanation with the minimum number of variables that are responsible for an undesirable situation.

5. Ethical and Ideological Neutrality

The conclusions drawn through interpretation of the results of data analysis should be objective; that is, they should be based on the facts of the findings derived from actual data, and not on our own subjective or emotional values. For instance, if we had a hypothesis that stated that greater participation in decision making will increase organizational commitment, and this was not supported by the results, it makes no sense if the researcher continues to argue that increased opportunities for employee participation would still help. Such an argument would be based, not on the factual, data based research findings, but on the subjective opinion of the researcher. If this was the conviction of the researcher all along, then there was no need to do the research in the first place.

Researchers are human beings, having individual ideologies, religious affiliations, cultural differences which can influence the research findings. Any interference of their personal likings and dis-likings in their research can contaminate the purity of the data, which ultimately can affect the predictions made by the researcher. Therefore, one of the important characteristics of scientific method is to follow the principle of objectivity, uphold neutrality, and present the results in an unbiased manner.

6. Statistical Generalization

Generalizability refers to the scope of the research findings in one organizational setting to other settings. Obviously, the wider the range of applicability of the solutions generated by research, the more useful the research is to users. For instance, if a researcher's findings that participation in decision making enhances organizational commitment are found to be true in a variety of manufacturing, industrial, and service organizations, and not merely in the particular organization studied by the researcher, the generalizability of the findings to other organizational settings is enhanced. The more generalizable the research, the greater is its usefulness and value.

For wider generalizability, the research sampling design has to be logically developed and a number of other details in the data collection methods need to be meticulously followed. Here the use of statistics is very helpful. Statistics is device for comparing what is observed and what is logically expected. The use of statistics becomes helpful in making generalizations, which is one of the goals of scientific method.

7. Rationalism

Science is fundamentally a rational activity, and the scientific explanation must make sense. Religion may rest on revelations, custom, or traditions, gambling on faith, but science must rest on logical reason.

There are two distinct logical systems important to the scientific quest, referred to as deductive logic and inductive logic. Beveridge describes them as follows:

> *Logicians distinguish between inductive reasoning (from particular instances to general principles, from facts to theories) and deductive reasoning (from the general to the particular, applying a theory to a particular case). In induction one starts from observed data and develops a generalization which explains the relationships between the objects observed. On the other hand, in deductive reasoning one starts from some general law and applies it to a particular instance.*

The classical illustration of deductive logic is the familiar syllogism: "All men are mortal; Mahmood is man; therefore Mahmood is mortal." A researcher might then follow up this deductive exercise with an empirical test of Mahmood's mortality.

Using inductive logic, the researcher might begin by noting that Mahmood is mortal and observing a number of other mortals as well. He might then note that all the observed mortals were men, thereby arriving at the tentative conclusion that all men are mortal.
In practice, scientific research involves both inductive and deductive reasoning as the scientist shifts endlessly back and forth between theory and empirical observations.
There could be some other aspects of scientific method (e.g. self-correcting) but what is important is that **all features are interrelated.** Scientists may not adhere to all these characteristics. For example, objectivity is often violated especially in the study of human behavior, particularly when human beings are studied by the human beings. Personal biases of the researchers do contaminate the findings.
Looking at the important features of scientific method one might say that there are **two power bases of scientific knowledge:** (1) empiricism i.e. sensory experiences or observation, and (2) rationalism i.e. the logical explanations for regularity and then consequential argumentation for making generalizations (theory).

Finally it may be said that anybody who is following the scientific procedure of doing research is doing a scientific research; and the knowledge generated by such research is scientific knowledge. Depending upon the subject matter, we try to divide the sciences into physical or natural sciences and the social sciences. Due to the nature of the subject matter of the social sciences, it is rather very difficult to apply the scientific method of research rigorously and that is why the predictions made by the social researchers are not as dependable as the predictions made by the natural scientists.

Lesson 3: CLASSIFICATION OF RESEARCH

Research comes in many shapes and sizes. Before a researcher begins to conduct a study, he or she must decide on a specific type of research. Good researchers understand the advantages and disadvantages of each type, although most end up specializing in one.
For classification of research we shall look from four dimensions:

1. The purpose of doing research;
2. The intended uses of research;
3. How it treats time i.e. the time dimension in research; and
4. The research (data collection) techniques used in it.

The four dimensions reinforce each other; that is, a purpose tends to go with certain techniques and particular uses. Few studies are pure types, but the dimensions simplify the complexity of conducting research.

1. Purpose of Doing Research

If we ask someone why he or she is conducting a study, we might get a range of responses: "My boss told me to do"; "It was a class assignment"; "I was curious." There are almost as many reasons to do research as there are researches. Yet the purposes of research may be organized into three groups based on what the researcher is trying to accomplish – explore a new topic, describe a social phenomenon, or explain why something occurs. Studies may have multiple purposes (e.g. both to explore and to describe) but one purpose usually dominates.

a. Exploratory/Formulative Research

You may be **exploring a new topic** or issue in order to learn about it. If the issue was new or the researcher has written little on it, you begin at the beginning. This is called *exploratory research.* The researcher's goal is to formulate more precise questions that future research can answer. Exploratory research may be the first stage in a sequence of studies. A researcher may need to know enough to design and execute a second, more systematic and extensive study.

Initial research conducted to clarify the nature of the problem. When a researcher has a limited amount of experience with or knowledge about a research issue, **exploratory research** is useful preliminary step that helps ensure that a more rigorous, more conclusive future study will not begin with an inadequate understanding of the nature of the management problem. The findings discovered through exploratory research would encourage the researchers to emphasize learning more about the particulars of the findings in subsequent conclusive studies. Exploratory research rarely yields definitive answers. It addresses the "what" question: "what is this social activity really about?" It is difficult to conduct because there are few guidelines to follow. Specifically there could be a number of goals of exploratory research.

Goals of Exploratory Research:

1. Become familiar with the basic facts, setting, and concerns;
2. Develop well-grounded picture of the situation;
3. Develop tentative theories, generate new ideas, conjectures, or hypotheses;
4. Determine the feasibility of conducting the study;
5. Formulate questions and refine issues for more systematic inquiry; and
6. Develop techniques and a sense of direction for future research.

For exploratory research, the researcher may use different sources for getting information like (1) experience surveys, (2) secondary data analysis, (3) case studies, and (4) pilot studies.
As part of the experience survey the researcher tries to contact individuals who are knowledgeable about a particular research problem. This constitutes an informal experience survey.
Another economical and quick source of background information is secondary data analysis. It is preliminary review of data collected for another purpose to clarify issues in the early stages of a research effort.
The purpose of case study is to obtain information from one or a few situations that are similar to the researcher's problem situation. A researcher interested in doing a nationwide survey among union workers, may first look at a few local unions to identify the nature of any problems or topics that should be investigated.
A pilot study implies that some aspect of the research is done on a small scale. For this purpose focus group discussions could be carried out.

b. Descriptive Research

Descriptive research presents a picture of the specific details of a situation, social setting, or relationship. The major purpose of descriptive research, as the term implies, is to describe characteristics of a population or phenomenon. Descriptive research seeks to determine the answers to *who, what, when, where*, and *how* questions. Labor Force Surveys, Population Census, and Educational Census are examples of such research.
Descriptive study offers to the researcher a profile or description of relevant aspects of the phenomena of interest. Look at the class in research methods and try to give its profile – the characteristics of the students. When we start to look at the relationship of the variables, then it may help in diagnosis analysis.

Goals of Descriptive Research

1. Describe the situation in terms of its characteristics i.e. provide an accurate profile of a group;
2. Give a verbal or numerical picture (%) of the situation;
3. Present background information;
4. Create a set of categories or classify the information;
5. Clarify sequence, set of stages; and
6. Focus on 'who,' 'what,' 'when,' 'where,' and 'how' but not why?

A great deal of social research is descriptive. Descriptive researchers use most data –gathering techniques – surveys, field research, and content analysis.

c. Explanatory Research

When we encounter an issue that is already known and have a description of it, we might begin to wonder *why* things are the way they are. The desire to know "why", to explain, is the purpose of *explanatory research*. It builds on exploratory and descriptive research and goes on to identify the reasons for something that occurs. Explanatory research looks for causes and reasons. For example, a descriptive research may discover that 10 percent of the parents abuse their children, whereas the explanatory researcher is more interested in learning *why* parents abuse their children.

Goals of Explanatory Research

1. Explain things not just reporting. Why? Elaborate and enrich a theory's explanation.
2. Determine which of several explanations is best.
3. Determine the accuracy of the theory; test a theory's predictions or principle.
4. Advance knowledge about underlying process.
5. Build and elaborate a theory; elaborate and enrich a theory's predictions or principle.
6. Extend a theory or principle to new areas, new issues, new topics:
7. Provide evidence to support or refute an explanation or prediction.
8. Test a theory's predictions or principles

2. The Uses of Research

Some researchers focus on using research to advance general knowledge, whereas others use it to solve specific problems. Those who seek an understanding of the fundamental nature of social reality are engaged in basic research (also called academic research or pure research or fundamental research). Applied researchers, by contrast, primarily want to apply and tailor knowledge to address a specific practical issue. They want to answer a policy question or solve a pressing social and economic problem.

a. Basic Research

Basic research advances fundamental knowledge about the human world. It focuses on refuting or supporting theories that explain how this world operates, what makes things happen, why social relations are a certain way, and why society changes. Basic research is the source of most new scientific ideas and ways of thinking about the world. It can be exploratory, descriptive, or explanatory; however, explanatory research is the most common.

Basic research generates new ideas, principles and theories, which may not be immediately utilized; though are the foundations of modern progress and development in different fields. Today's computers could not exist without the pure research in mathematics conducted over a century ago, for which there was no known practical application at that time.

Police officers trying to prevent delinquency or counselors of youthful offenders may see little relevance to basic research on the question, "Why does deviant behavior occur?" Basic research rarely helps practitioners directly with their everyday concerns. Nevertheless, it stimulates new ways of thinking about deviance that have the potential to revolutionize and dramatically improve how practitioners deal with a problem.

A new idea or fundamental knowledge is not generated only by basic research. Applied research, too, can build new knowledge. Nonetheless, basic research is essential for nourishing the expansion of knowledge. Researchers at the center of the scientific community conduct most of the basic research.

b. Applied Research

Applied researchers try to solve specific policy problems or help practitioners accomplish tasks. Theory is less central to them than seeking a solution on a specific problem for a limited setting. Applied research is frequently a descriptive research, and its main strength is its immediate practical use.

Applied research is conducted when decision must be made about a specific real-life problem. Applied research encompasses those studies undertaken to answer questions about specific problems or to make decisions about a particular course of action or policy. For example, an organization contemplating a paperless office and a networking system for the company's personal computers may conduct research to learn the amount of time its employees spend at personal computers in an average week.

c. Basic and Applied Research Compared

The procedures and techniques utilized by basic and applied researchers do not differ substantially. Both employ the scientific method to answer the questions at hand.
The scientific community is the primary consumer of basic research. The consumers of applied research findings are practitioners such as teachers, counselors, and caseworkers, or decision makers such as managers, committees, and officials. Often, someone other than the researcher who conducted the study uses the results of applied research. This means that applied researchers have an obligation to translate findings from scientific technical language into the language of decision makers or practitioners.
The results of applied research are less likely to enter the public domain in publications. Results may be available only to a small number of decision makers or practitioners, who decide whether or not to put the research results into practice and who may or may not use the results.
Applied and basic researchers adopt different orientations toward research methodology. Basic researchers emphasize high standards and try to conduct near-perfect research. Applied researchers make more trade-offs. They may compromise scientific rigor to get quick, usable results. Compromise is no excuse for sloppy research, however. Applied researchers squeeze research into the constraints of an applied setting and balance rigor against practical needs. Such balancing requires an in-depth knowledge of research and an awareness of the consequences of compromising standards.

d. Types of Applied Research

Practitioners use several types of applied research. Some of the major ones are:

i) Action research: The applied research that treats knowledge as a form of power and abolishes the line between research and social action. Those who are being studied participate in the research process; research incorporates ordinary or popular knowledge; research focuses on power with a goal of empowerment; research seeks to raise consciousness or increase awareness; and research is tied directly to political action.
The researchers try to advance a cause or improve conditions by expanding public awareness.
They are explicitly political, not value neutral. Because the goal is to improve the conditions of research participants; formal reports, articles, or books become secondary. Action researchers assume that knowledge develops from experience, particularly the experience of social-political action. They also assume that ordinary people can become aware of conditions and learn to take actions that can bring about improvement.

***ii) Impact Assessment Research*:** Its purpose is to estimate the likely consequences of a planned change. Such an assessment is used for planning and making choices among alternative policies – to make an impact assessment of Basha Dam on the environment; to determine changes in housing if a major new highway is built.

***iii) Evaluation Research*:** It addresses the question, "Did it work?" The process of establishing value judgment based on evidence about the achievement of the goals of a program. Evaluation research measures the effectiveness of a program, policy, or way of doing something. "Did the program work?" "Did it achieve its objectives?" Evaluation researchers use several research techniques (survey, field research).

Practitioners involved with a policy or program may conduct evaluation research for their own information or at the request of outside decision makers, who sometime place limits on researchers by setting boundaries on what can be studied and determining the outcome of interest.

Two types of evaluation research are formative and summative. *Formative evaluation* is built-in monitoring or continuous feedback on a program used for program management. *Summative evaluation* looks at final program outcomes. Both are usually necessary.

3. The Time Dimension in Research

Another dimension of research is the treatment of time. Some studies give us a snapshot of a single, fixed time point and allow us to analyze it in detail. Other studies provide a moving picture that let us follow events, people, or sale of products over a period of time. In this way from the angle of time research could be divided into two broad types:

***a. Cross-Sectional Research*.** In *cross-sectional research*, researchers observe at one point in time. Cross-sectional research is usually the simplest and least costly alternative. Its disadvantage is that it cannot capture the change processes. Cross-sectional research can be exploratory, descriptive, or explanatory, but it is most consistent with a descriptive approach to research.

b. Longitudinal Research. Researchers using longitudinal research examine features of people or other units at more than one time. It is usually more complex and costly than cross-sectional research but it is also more powerful, especially when researchers seek answers to questions about change. There are three types of longitudinal research: time series, panel, and cohort.

i. *Time series research* is longitudinal study in which the same type of information is collected on a group of people or other units across multiple time periods. Researcher can observe stability or change in the features of the units or can track conditions overtime. One could track the characteristics of students registering in the course on Research Methods over a period of four years i.e. the characteristics (Total, age characteristics, gender distribution, subject distribution, and geographic distribution). Such an analysis could tell us the trends in the characteristic over the four years.

ii. *The panel study* is a powerful type of longitudinal research. In panel study, the researcher observes exactly the same people, group, or organization across time periods. It is difficult to carry out such a study. Tracking people over time is often difficult because some people die or cannot be located. Nevertheless, the results of a well-designed panel study are very valuable.

iii. A cohort analysis is similar to the panel study, but rather than observing the exact same people, a category of people who share a similar life experience in a specified time period is studied. The focus is on the cohort, or category, not on specific individuals. Commonly used cohorts include all people born in the same year (called birth cohorts), all people hired at the same time, all people retire on one or two year time frame, and all people who graduate in a given year. Unlike panel

studies, researchers do not have to locate the exact same people for cohort studies. The only need to identify those who experienced a common life event.

4. Research (data collection) Techniques Used

Every researcher collects data using one or more techniques. The techniques may be grouped into two categories: *quantitative*, collecting data in the form of numbers, and *qualitative*, collecting data in the form of words or pictures.

a. Quantitative

The main quantitative techniques are:

1. Experiments
2. Surveys
3. Content Analysis
4. Using Existing Statistics

b. Qualitative

The major qualitative techniques of research are:

1. Field Research
2. Case Study
3. Focus Group Discussion

Details about the quantitative and qualitative techniques of research shall be discussed later.

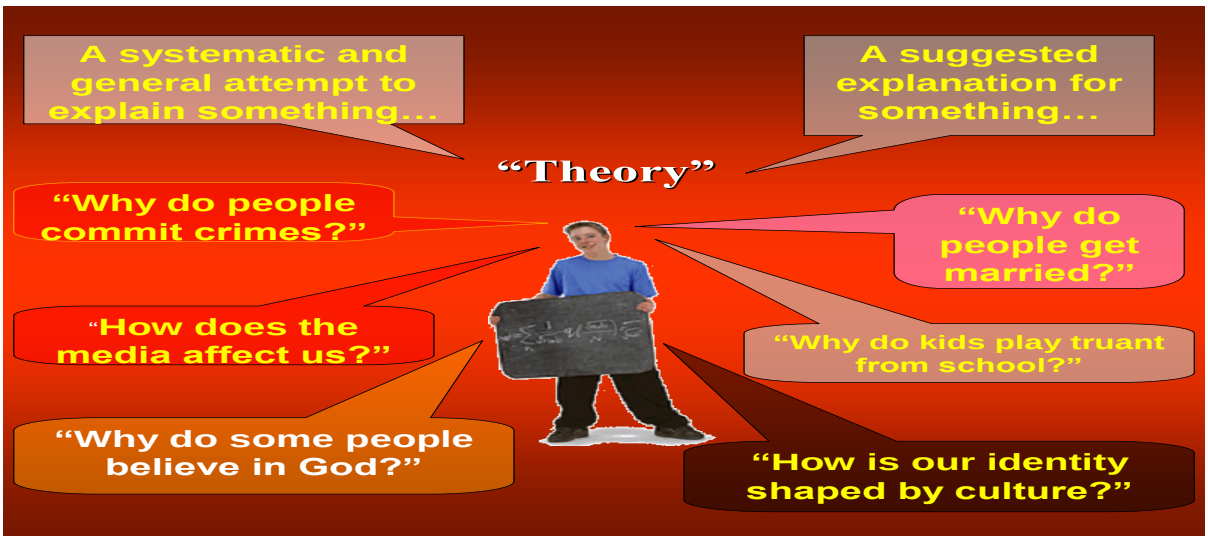
Lesson 4: THEORY AND RESEARCH

The purpose of science concerns the expansion of knowledge, the discovery of truth and to make predictions. Theory building is the means by which the basic researchers hope to achieve this purpose. A scientist poses questions like: What produces inflation? Does student-teacher interaction influence students' performance? In both these questions there is the element of prediction i.e. that if we do such and such, then so and so will happen. In fact we are looking for explanation for the issue that has been raised in these questions. Underlying the explanation is the whole process through which the phenomenon emerges, and we would like to understand the process to reach prediction.

Prediction and understanding are the two purposes of theory. Accomplishing the first goal allows the theorist to predict the behavior or characteristics of one phenomenon from the knowledge of another phenomenon's characteristics. A business researcher may theorize that older investors tend to be more interested in investment income than younger investors. This theory, once verified, should allow researchers to predict the importance of expected dividend yield on the basis of investors' age. The researcher would also like to understand the process. In most of the situations prediction and understanding the process go hand in hand i.e. to predict the phenomenon, we must have an explanation of why variables behave as they do. Theories provide these explanations.

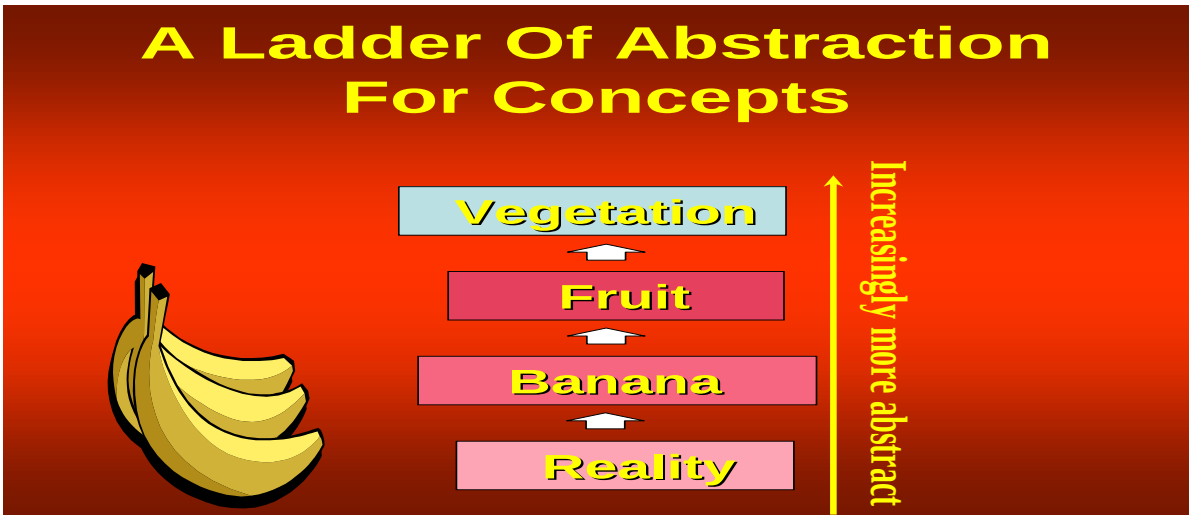
Theory

As such theory is a systematic and general attempt to explain something like: Why do people commit crimes? How do the media affect us? Why do some people believe in God? Why do people get married? Why do kids play truant from school? How is our identity shaped by culture? Each of these questions contains a reference to some observed phenomenon. A suggested explanation for the observed phenomenon is theory. More formally, a **theory** is a coherent set of general propositions, used as principles of explanations of the apparent relationship of certain observed phenomena. A key element in this definition is the term proposition.



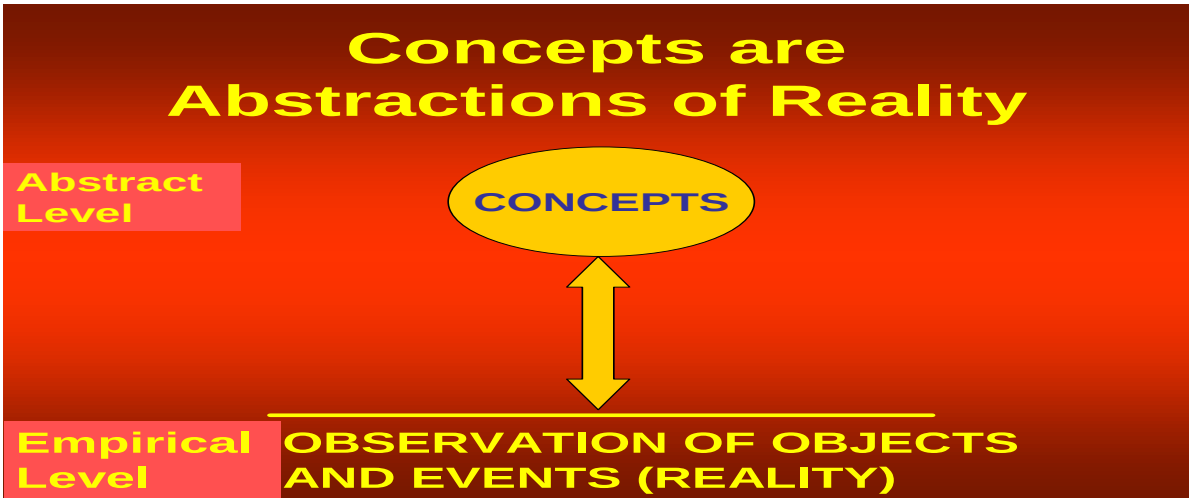
Concepts

Theory development is essentially a process of describing phenomena at increasingly higher levels of abstraction. A **concept** (or construct) is a generalized idea about a class of objects, attributes, occurrences, or processes that has been given a **name**. Such names are created or developed or constructed for the identification of the phenomenon, be it physical or non-physical. All these may be considered as empirical realities e.g. leadership, productivity, morale, motivation, inflation, happiness, banana.
Concepts are the building block of a theory. Concepts abstract reality. That is, concepts are expressed in words, letters, signs, and symbols that refer to various events or objects. For example, the concept "asset" is an abstract term that may, in the concrete world of reality, refer to a specific punch press machine. Concepts, however, may vary in degree of abstraction and we can put them in a ladder of abstraction, indicating different levels.



Moving up the **ladder of abstraction,** the basic concept becomes more abstract, wider in scope, and less amenable to measurement. The scientific researcher operates at two levels: on the abstract level of concepts (and propositions) and on the empirical level of variables (and hypotheses). At the empirical level we "experience" reality – that is we observe the objects or events. In this example the reality has been given a name i.e. banana. Moving up the ladder this reality falls in wider reality i.e. fruit, which in turn becomes part of further wider reality called as vegetation.

Researchers are concerned with the observable world, or what we may call as "reality." We try to construct names to such empirical reality for its identification, which may refer to as concept at an abstract level.

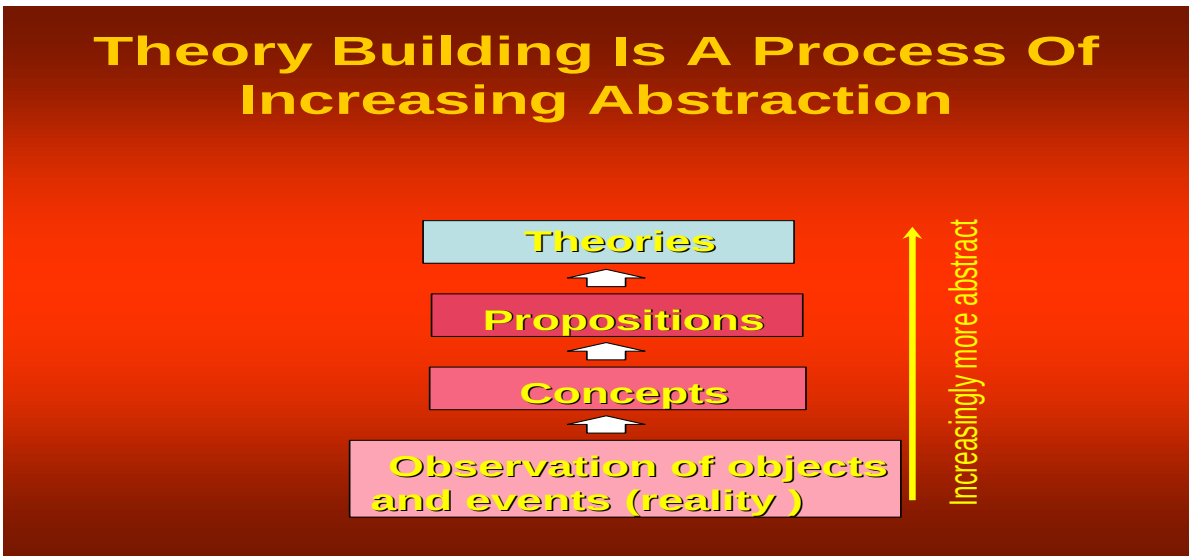


Theorists translate their conceptualization of reality into abstract ideas. Thus theory deals with abstraction. Things are not the essence of theory; ideas are. Concepts in isolation are not theories. Only when we explain how concepts relate to other concepts we begin to construct theories.

Propositions

Concepts are the basic units of theory development. However, theories require an understanding of the relationship among concepts. Thus, once reality is abstracted into concepts, the scientist is interested in the relationship among various concepts. **Propositions** are statements concerned with the logical relationships among concepts. A proposition explains the logical linkage among certain concepts by asserting a universal connection between concepts.

Theory is an abstraction from observed reality. Concepts are at one level of abstraction. Investigating propositions requires that we increase our level of abstract thinking. When we think about theories, we are at the highest level of abstraction because we are investigating the relationship between propositions. Theory is a network of propositions.



Theory and Research

Basic to modern science is an intricate relation between theory and research. The popular understanding of this relationship obscures more than it illuminates. Popular opinion generally conceives of these as direct opposites: theory is confused with speculation, and thus theory remains speculation until it is proved. When this proof is made, theory becomes fact. Facts are thought to be definite, certain, without question, and their meaning to be self-evident.

When we look at what scientists actually do when engaged in research, it becomes clear (1) that theory and fact are not diametrically opposed, but inextricably intertwined; (2) that theory is not speculation; and (3) that scientists are very much concerned with both theory and fact (research).

Hence research produces facts and from facts we can generate theories. Theories are soft mental images whereas research covers the empirical world of hard, settled, and observable things. In this way theory and fact (research) contribute to each other.

Role of Theory

1. Theory as orientation.

A major function of a theoretical system is that it narrows the range of facts to be studied. Any phenomenon or object may be studied in many different ways. A football, for example, can be investigated within an economic framework, as we ascertain the patterns of demand and supply relating to this play object. It may also be the object of chemical research, for it is made of organic chemicals. It has a mass and may be studied as physical object undergoing different stresses and attaining certain velocities under various conditions. It may also be seen as the center of many sociologically interesting activities – play, communication, group organization, etc.

Each science and each specialization within a broader field abstracts from reality, keeping its attention upon a few aspects of given phenomena rather than on all aspects. The broad orientation of each field then focuses upon limited range of things while ignoring or making assumptions about others.

2. Theory as a conceptualization and classification.

Every science is organized by a structure of concepts, which refer to major processes and objects to be studied. It is the relationship between these concepts which are stated in "the facts of science." Such terms make up the vocabulary that the scientist uses. If knowledge is to be organized, there must be some system imposed upon the facts which are observable. As a consequence, a major task in any science is the development of classification, a structure of concepts, and an increasingly precise set of definitions for these terms.

3. Theory in summarizing role.

A further task which theory performs is to summarize concisely what is already known about the object of study. These summaries may be divided into two simple categories: (1) empirical generalizations, and (2) systems of relationships between propositions.

Although the scientist may think of his field as a complex structure of relationships, most of his daily work is concerned with prior task: the simple addition of data, expressed in empirical generalizations. The demographer may tabulate births and deaths during a given period in

order to ascertain the crude rate of reproduction. These facts are useful and are summarized in simple or complex theoretical relationships. As body of summarizing statements develops, it is possible to see *relationships between the statements*.

Theorizing on a still larger scale, some may attempt to integrate the major empirical generalizations of an era. From time to time in any science, there will be changes in this.

It is through systems of propositions that many of our common statements must be interpreted. Facts are seen within a framework rather than in an isolated fashion.

4. Theory predicts facts.

If theory summarizes facts and states a general uniformity beyond the immediate observation, it also becomes a prediction of facts. This prediction has several facets. The most obvious is the extrapolation from the known to the unknown. For example, we may observe that in every known case the introduction of Western technology has led to a sharp drop in the death rate and a relatively minor drop in the birth rate of a given nation, at least during the initial stages. Thus we predict that if Western technology is introduced into a native culture, we shall find this process again taking place. Correspondingly we predict that in a region where Western technology has already been introduced, we shall find that this process has occurred.

5. Theory points gaps in knowledge.

Since theory summarizes the known facts and predicts facts which have not been observed, it must also point to areas which have not yet been explored.

Theory also points to gaps of a more basic kind. While these gaps are being filled, changes in the conceptual scheme usually occur. An example from criminology may be taken. Although a substantial body of knowledge had been built up concerning criminal behavior and it causes. A body of theory dealing with causation was oriented almost exclusively to the crimes committed by the lower classes. Very little attention has been paid to the crimes committed by the middle class or, more specifically, to the crimes labeled as "white collar" and which grow out of the usual activities of businessmen. Such a gap would not be visible if our facts were not systematized and organized. As a consequence, we may say that theory does suggest where our knowledge is deficient.

Role of Facts (Research)

Theory and fact are in constant interaction. Developments in one may lead to developments in the other. Theory, implicit or explicit, is basic to knowledge and even perception. Theory is not merely a passive element. It plays an active role in the uncovering of facts. We should expect that "fact" has an equally significant part to play in the development of theory. Science actually depends upon a continuous stimulation of fact by theory and of theory by fact.

1. Facts initiate theory.

Many of the human interest stories in the history of science describe how a striking fact, sometimes stumbled upon, led to important theories. This is what the public thinks of as a "discovery." Examples may be taken from many sciences: accidental finding that the penicillium fungus inhibits bacterial growth; many errors in reading, speaking, or seeing are not accidental but have deep and systematic causes. Many of these stories take an added drama in the retelling, but they express a fundamental fact in the growth of science, that an apparently simple observation may lead to significant theory.

2. Facts lead to the rejection and reformulation of existing theory.

Facts do not completely determine theory, since many possible theories can be developed to take account of a specific set of observation. Nevertheless, facts are the more stubborn of the two. Any theory must adjust to facts and is rejected or reformulated if they cannot be fitted into its structure. Since research is continuing activity, rejection and reformulation are likely to be going on simultaneously. Observations are gradually accumulated which seem to cast doubt upon existing theory. While new tests are being planned, new formulations of theory are developed which might fit these new facts.

3. Facts redefine and clarify theory.

Usually the scientist has investigated his/her problem for a long time prior to actual field or laboratory test and is not surprised by his/her results. It is rare that he/she finds a fact that simply does not fit prior theory.

New facts that fit the theory will always redefine the theory, for they state in detail what the theory states in very general terms. They clarify that theory, for they throw further light upon its concepts.

Theory and Research: the Dynamic Duo

Theory and research are interrelated; the dichotomy between theory and research is artificial. The value of theory and its necessity for conducting good research should be clear. Researchers who proceed without theory rarely conduct top-quality research and frequently find themselves in confusion. Researchers weave together knowledge from different studies into more abstract theory. Likewise, who proceed without linking theory to research or anchoring it to empirical reality are in jeopardy of floating off into incomprehensible speculation and conjecture.

Lesson 5: CONCEPTS

Things we observe are the observable realities, which could be physical or abstract. For purposes of identification of reality we try to give a name to it. By using the name we communicate with others and over time it becomes part of our language.
A concept is a generalized idea about a class of objects, attributes, occurrences, or processes that has been given a name. In other words a concept is an idea expressed as a symbol or in words. Natural science concepts are often expressed in symbolic forms. Most social science concepts are expressed as words. Words, after all, are symbols too; they are symbols we learn with language. Height is a concept with which all of you are familiar. In a sense, a language is merely an agreement to represent ideas by sound or written characters that people learned at some point in their lives. Learning concepts and theory is like learning language.

Concepts are an Abstraction of Reality

Concepts are everywhere, and you use them all the time. Height is simple concept form everyday experience. What does it mean? It is easy to use the concept of height, but describing the concept itself is difficult. It represents an abstract idea about physical reality, or **an abstraction of reality**. Height is a characteristic of physical objects, the distance from top to bottom. All people, buildings, trees, mountains, books and so forth have height. The word height refers to an abstract idea. We associate its sound and its written form with that idea. There is nothing inherent in the sounds that make up the word and the idea it represents. The connection is arbitrary, but it is still useful. People can express the abstract idea to one another using the symbols.

In other words concepts are the abstractions of reality – physical of non-physical like table, leadership, productivity, and morale are all labels given to some phenomenon (reality). The concepts stand for phenomenon not the phenomenon itself; hence it may be called an abstraction of empirical reality.

Degree of Abstraction

Concepts vary in their level of abstraction. They are on a continuum from the most concrete to the most abstract. Very concrete ones refer to straightforward physical objects or familiar experiences (e.g. height, school, age, family income, or housing). More abstract concepts refer to ideas that have a diffuse, indirect expression (e.g. family dissolution, racism, political power) **The organization of concepts in sequence from the most concrete and individual to the most general** indicates the degree of abstraction**.** Moving up the ladder of abstraction, the basic concept becomes more abstract, wider in scope, and less amenable to measurement. The scientific researcher operates at two levels of concepts (and propositions) and on the empirical level of variables. At the empirical level we experience reality – that is we observe objects or events.

Sources of Concepts

Everyday culture is filled with concepts, but many of them have vague and unclear definitions. Likewise, the values and experiences of people in a culture may limit everyday concepts. Nevertheless, we borrow concepts from everyday culture; though these to be refined.

We create concepts from personal experiences, creative thought, or observation. The classical theorist originated many concepts like family system, gender role, socialization, self-worth, frustration, and displaced aggression.
We also borrow concepts from sister disciplines.

Importance of Concepts

Social science concepts form a specialized language, or *jargon.* Specialists use jargon as a short hand way to communicate with one another. Most fields have their own jargon. Physicians, lawyers, engineers, accountants, plumbers, and auto mechanics all have specialized languages. They use their jargon to refer to the ideas and objects with which they work. Special problems grow out of the need for concept precision and inventiveness. Vague meanings attached to a concept create problems of measurement. Therefore, not only the construction of concepts is necessary but also these should be precise and the researchers should have some agreement to its meaning.
Identification of concepts is necessary because we use concepts in hypothesis formulation. Here too one of the characteristics of a good hypothesis is that it should be conceptually clear.
The success of research hinges on (1) how clearly we conceptualize and (2) how well others understand the concept we use. For example we might ask respondents for an estimate of their family income. This may seem to be a simple, unambiguous concept, but we may receive varying and confusing answers unless we restrict or narrow the concept by specifying:

- Time period, such as weekly, monthly, or annually.
- Before or after income taxes.
- For head of the family only or for all family members.
- For salary and wages only or also for dividends, interest, and capital gains.
- Income in kind, such as free rent, employee discounts, or food stamps.

Definitions

Confusion about the meaning of concepts can destroy a research study's value without the researcher or client even knowing it. If words have different meanings to the parties involved, then they are not communicating on the same wave-length. Definitions are one way to reduce this danger.

Dictionary Definitions

Researchers must struggle with two types of definitions. In the more familiar dictionary, a concept is defined with synonyms. For example, a customer is defined as a patron: a patron, in turn, is defined as customer or client of an establishment; a client is defined as one who employs the services of any professional …, also loosely, a patron of any shop. These circular definitions may be adequate for general communication but not for research.
Dictionary definitions are also called conceptual or theoretical or nominal definitions. Conceptual definition is a definition in abstract, theoretical terms. It refers to other ideas or constructs. There is no magical way to turn a construct into precise conceptual definition. It involves thinking carefully, observing directly, consulting with others, reading what others have said, and trying possible definitions.
A single construct can have several definitions, and people may disagree over definitions. Conceptual definitions are linked to theoretical frameworks and to value positions. For example, a conflict theorist may define *social class* as the power and property a group of

people in a society has or lacks. A structural functionalist defines it in terms of individual who share a social status, life-style, or subjective justification. Although people disagree over definitions, the researcher should always state explicitly which definition he or she is using.
Some constructs are highly abstract and complex. They contain lower level concepts within them (e.g. powerlessness), which can be made even more specific (e.g. a feeling of little power over wherever on lives). Other concepts are concrete and simple (e.g. age). When developing definitions, a researcher needs to be aware of how complex and abstract a construct is. For example, a concrete construct such as age is easier to define (e.g. number of years that have passed since birth) than is a complex, abstract concept such as morale.

Operational Definition

In research we must measure concepts and constructs, and this requires more rigorous definitions. A concept must be made operational in order to be measured. An operational definition gives meanings to a concept by specifying the activities or operations necessary to measure it. An operational definition specifies what must be done to measure the concept under investigation. It is like a manual of instruction or a recipe: do such-and-such in so-and-so manner.
Operational definition is also called a *working definition* stated in terms of specific testing or measurement criteria. The concepts must have empirical referents (i.e. we must be able to count, measure, or in some other way gather the information through our senses). Whether the object to be defined is physical e.g. a machine tool) or highly abstract (e.g. achievement motivation), the definition must specify characteristics and how to be observed. The specification and procedures must be so clear that any competent person using them would classify the objects the same way. So in operational definition we must specify concrete indicators that can be observed/measured (observable indicators).

Use both Definitions in Research

Look at observable phenomenon, we construct a label for it, then try to define it theoretically, which gives a lead to the development of criteria for its measurement, and finally we gather the data.

Lesson 06: VARIABLES AND TYPES OF VARIABLES

Variable is central idea in research. Simply defined, variable is a concept that varies. There are two types of concepts: those that refer to a fixed phenomenon and those that vary in quantity, intensity, or amount (e.g. amount of education). The second type of concept and measures of the concept are variables. A variable is defined as anything that varies or changes in value. Variables take on two or more values. Because variable represents a quality that can exhibit differences in value, usually magnitude or strength, it may be said that a variable generally is anything that may assume different numerical or categorical values. Once you begin to look for them, you will see variables everywhere. For example gender is a variable; it can take two values: male or female. Marital status is a variable; it can take on values of never married, single, married, divorced, or widowed. Family income is a variable; it can take on values from zero to billions of Rupees. A person's attitude toward women empowerment is variable; it can range from highly favorable to highly unfavorable. In this way the variation can be in quantity, intensity, amount, or type; the examples can be production units, absenteeism, gender, religion, motivation, grade, and age. A variable may be situation specific; for example gender is a variable but if in a particular situation like a class of Research Methods if there are only female students, then in this situation gender will not be considered as a variable.

Types of Variable

1. Continuous and Discontinuous variables

Variables have different properties and to these properties we assign numerical values. If the values of a variable can be divided into fractions then we call it a *continuous variable*. Such a variable can take infinite number of values. Income, temperature, age, or a test score are examples of continuous variables. These variables may take on values within a given range or, in some cases, an infinite set.

Any variable that has a limited number of distinct values and which cannot be divided into fractions, is a *discontinuous variable*. Such a variable is also called as *categorical variable* or *classificatory variable*, or *discrete variable*. Some variables have only two values, reflecting the presence or absence of a property: employed-unemployed or male-female have two values. These variables are referred to as dichotomous. There are others that can take added categories such as the demographic variables of race, religion. All such variables that produce data that fit into categories are said to be discrete/ categorical/ classificatory, since only certain values are possible. An automotive variable, for example, where "Chevrolet" is assigned a 5 and "Honda" is assigned a 6, provides no option for a 5.5 (i.e. the values cannot be divided into fractions).

2. Dependent and Independent Variables

Researchers who focus on causal relations usually begin with an effect, and then search for its causes. The cause variable, or the one that identifies forces or conditions that act on something else, is the *independent variable*. The variable that is the effect or is the result or outcome of another variable is the *dependent variable* (also referred to as outcome variable or effect variable). The independent variable is "independent of" prior causes that act on it, whereas the dependent variable "depends on" the cause.

It is not always easy to determine whether a variable is independent or dependent. Two questions help to identify the independent variable. First, does it come before other variable in time? Second, if the variables occur at the same time, does the researcher suggest that one

variable has an impact on another variable? Independent variables affect or have an impact on other variables. When independent variable is present, the dependent variable is also present, and with each unit of increase in the independent variable, there is an increase or decrease in the dependent variable also. In other words, the variance in dependent variable is accounted for by the independent variable. Dependent variable is also referred to as *criterion* variable.
In statistical analysis, a variable is identified by the symbol (X) for independent variable and by the symbol (Y) for the dependent variable. In the research vocabulary different labels have been associated with the independent and dependent variables like:

Independent variable	**Dependent variable**
Presumed cause	presumed effect
Stimulus	Response
Predicted from …	Predicted to …
Antecedent	Consequence
Manipulated	Measured outcome
Predictor	Criterion

Research studies indicate that successful new product development has an influence on the stock market price of a company. That is, the more successful the new product turns out to be, the higher will be the stock market price of that firm. Therefore, the **success of the new product** is the *independent variable*, and **stock market price** the *dependent variable*.
The degree of perceived success of the new product developed will explain the variance in the stock market price of the company.
It is important to remember that there are no preordained variables waiting to be discovered "out there" that are automatically assigned to be independent or dependent. It is in fact the product of the researcher's imagination demonstrated convincingly.

3. Moderating Variables

A moderating variable is one that has a strong *contingent* effect on the independent variable-dependent variable relationship. That is, the presence of a third variable (the moderating variable) modifies the original relationship between the independent and the dependent variable.
For example, a strong relationship has been observed between the quality of library facilities (X) and the performance of the students (Y). Although this relationship is supposed to be true generally, it is nevertheless contingent on the interest and inclination of the students. It means that only those students who have the interest and inclination to use the library will show improved performance in their studies. In this relationship **interest and inclination** is moderating variable i.e. which moderates the strength of the association between X and Y variables.

4. Intervening Variables

A basic causal relationship requires only independent and dependent variable. A third type of variable, the *intervening variable,* appears in more complex causal relationships. It comes between the independent and dependent variables and shows the link or mechanism between them. Advances in knowledge depend not only on documenting cause and effect relationship but also on specifying the mechanisms that account for the causal relation. In a sense, the intervening variable acts as a dependent variable with respect to independent variable and acts as an independent variable toward the dependent variable.

A theory of suicide states that married people are less likely to commit suicide than single people. The assumption is that married people have greater social integration (e.g. feelings of belonging to a group or family). Hence a major cause of one type of suicide was that people lacked a sense of belonging to group (family). Thus this theory can be restated as a three-variable relationship: marital status (independent variable) causes the degree of social integration (intervening variable), which affects suicide (dependent variable). Specifying the chain of causality makes the linkages in theory clearer and helps a researcher test complex relationships.

Look at another finding that five-day work week results in higher productivity. What is the process of moving from the independent variable to the dependent variable? What exactly is that factor which theoretically affects the observed phenomenon but cannot be seen? Its effects must be inferred from the effects of independent variable on the dependent variable. In this work-week hypothesis, one might view the intervening variable to be the job satisfaction. To rephrase the statement it could be: the introduction of five-day work week (IV) will increase job satisfaction (IVV), which will lead to higher productivity (DV).

5. Extraneous Variables

An almost infinite number of extraneous variables (EV) exist that might conceivably affect a given relationship. Some can be treated as independent or moderating variables, but most must either be assumed or excluded from the study. Such variables have to be identified by the researcher. In order to identify the true relationship between the independent and the dependent variable, the effect of the extraneous variables may have to be controlled. This is necessary if we are conducting an experiment where the effect of the confounding factors has to be controlled. Confounding factors is another name used for extraneous variables.

Relationship among Variables

Once the variables relevant to the topic of research have been identified, then the researcher is interested in the relationship among them. A statement containing the variable is called a proposition. It may contain one or more than one variable. The proposition having one variable in it may be called as univariate proposition, those with two variables as bivariate proposition, and then of course multivariate containing three or more variables. Prior to the formulation of a proposition the researcher has to develop strong logical arguments which could help in establishing the relationship. For example, age at marriage and education are the two variables that could lead to a proposition: the higher the education, the higher the age at marriage. What could be the logic to reach this conclusion? All relationships have to be explained with strong logical arguments.

If the relationship refers to an observable reality, then the proposition can be put to test, and any testable proposition is hypothesis.

Lesson 7: HYPOTHESIS TESTING & CHARACTERISTICS

We have already seen that propositions are statements about variables considered to be true or false. If the phenomenon under consideration happens to be observable reality then the said statement could be empirically tested. A proposition that can be verified to determine its reality is a hypothesis. Therefore one can say that a hypothesis is a verifiable counterpart of a proposition.
A hypothesis may be defined as a logically conjectured relationship between two or more variables, expressed in the form of a testable statement. Relationship is proposed by using a strong logical argumentation. This logical relationship may be part of theoretical framework of the study.

Let us look at some of the hypotheses:

1. Officers in my organization have higher than average *level of commitment* (variable).
2. *Level of job commitment* of the officers is associated with their *level of efficiency.*
3. *Level of job commitment* of the officers is positively associated with their *level of efficiency.*
4. The higher the *level of job commitment* of the officers the lower their *level of absenteeism.*

These are testable propositions. First hypothesis contains only one variable. The second one has two variables which have been shown to be associated with each other but the nature of association has not been specified (non-directional relationship). In the third hypothesis we have gone a step further where in addition to the relationship between the two variables, the direction of relationship (positive) has also been given. In the fourth hypothesis *level of efficiency* has been replaced with *level of absenteeism,* the direction of relationship between the two variables has been specified (which is negative). In the following discussion you will find these hypotheses being quoted as part of the examples.

Types of Hypotheses

i. Descriptive Hypothesis

Descriptive hypothesis contains only one variable thereby it is also called as univariate hypothesis. Descriptive hypotheses typically state the existence, size, form, or distribution of some variable.
The first hypothesis contains only one variable. It only shows the distribution of the level of commitment among the officers of the organization which is higher than average. Such a hypothesis is an example of a Descriptive Hypothesis.
Researchers usually use research questions rather than descriptive hypothesis. For example a question can be: What is the level of commitment of the officers in your organization?

ii. Relational Hypothesis

These are the propositions that describe a relationship between two variables. The relationship could be non-directional or directional, positive or negative, causal or simply correlational.
While stating the relationship between the two variables, if the terms of positive, negative, more than, or less than are used then such hypotheses are directional because the direction of

the relationship between the variables (positive/negative) has been indicated (see hypotheses 3 and 4). These hypotheses are relational as well as directional. The directional hypothesis is the one in which the direction of the relationship has been specified.
Non-directional hypothesis is the one in which the direction of the association has not been specified. The relationship may be very strong but whether it is positive or negative has not been postulated (see hypothesis 2).

Co-relational hypotheses
State merely that the variables occur together in some specified manner without implying that one causes the other. Such weak claims are often made when we believe that there are more basic causal forces that affect both variables. For example:

Level of job commitment of the officers is positively associated with their *level of efficiency.*

Here we do not make any claim that one variable causes the other to change. That will be possible only if we have control on all other factors that could influence our dependent variable.

Explanatory (causal) hypotheses
Imply the existence of, or a change in, one variable causes or leads to a change in the other variable. This brings in the notions of independent and the dependent variables. Cause means to "help make happen." So the independent variable may not be the sole reason for the existence of, or change in the dependent variable. The researcher may have to identify the other possible causes, and control their effect in case the causal effect of independent variable has to be determined on the dependent variable. This may be possible in an experimental design of research.

Different ways to state hypotheses

- Hi motivation causes hi efficiency.
- Hi motivation leads to hi efficiency.
- Hi motivation is related to hi efficiency.
- Hi motivation influences hi efficiency.
- Hi motivation is associated with hi efficiency.
- Hi motivation produces hi efficiency.
- Hi motivation results in hi efficiency.
- If hi motivation then hi efficiency.
- The higher the motivation, the higher the efficiency

iii. Null Hypothesis

It is used for testing the hypothesis formulated by the researcher. Researchers treat evidence that supports a hypothesis differently from the evidence that opposes it. They give negative evidence more importance than to the positive one. It is because the negative evidence tarnishes the hypothesis. It shows that the predictions made by the hypothesis are wrong. The null hypothesis simply states that there is *no relationship* between the variables or the

relationship between the variables is "zero." That is how symbolically null hypothesis is denoted as "H0". For example:
H0 = There is no relationship between the *level of job commitment* and the *level of efficiency.*
Or
H0 = The relationship between *level of job commitment* and the *level of efficiency* is zero. Or
The two variables are independent of each other.
It does not take into consideration the direction of association (i.e. H0 is *non directional*), which may be a second step in testing the hypothesis. First we look whether or not there is an association then we go for the direction of association and the strength of association. Experts recommend that we test our hypothesis indirectly by testing the null hypothesis. In case we have any credibility in our hypothesis then the research data should reject the null hypothesis. Rejection of the null hypothesis leads to the acceptance of the alternative hypothesis.

iv. Alternative Hypothesis

The alternative (to the null) hypothesis simply states that there is a relationship between the variables under study. In our example it could be: there is a relationship between the *level of job commitment* and the *level of efficiency.* Not only there is an association between the two variables under study but also the relationship is perfect which is indicated by the number "1". Thereby the alternative hypothesis is symbolically denoted as "H1". It can be written like this:
H1: There is a relationship between the *level of job commitment* of the officers and their *level of efficiency.*

v. Research Hypothesis

Research hypothesis is the actual hypothesis formulated by the researcher which may also suggest the nature of relationship i.e. the direction of relationship. In our example it could be:
Level of job commitment of the officers is positively associated with their *level of efficiency.*

The Role of the Hypothesis

In research, a hypothesis serves several important functions:

1. **It guides the direction of the study:** Quite frequently one comes across a situation when the researcher tries to collect all possible information on which he could lay his hands on. Later on he may find that only part of it he could utilize. Hence there was an unnecessary use of resources on trivial concerns. In such a situation, hypothesis limits what shall be studied and what shall not be.
2. **It identifies facts that are relevant and those that are not:** Who shall be studied (married couples), in what context they shall be studied (their consumer decision making), and what shall be studied (their individual perceptions of their roles).
3. **It suggests which form of research design is likely to be the most appropriate:** Depending upon the type of hypothesis a decision is made about the relative appropriateness of different research designs for the study under consideration. The design could be a survey design, experimental design, content analysis, case study, participation observation study, and/ or Focus Group Discussions.
4. **It provides a framework for organizing the conclusions of the findings:**

The Characteristics of a Testable Hypothesis

- **Hypothesis must be conceptually clear.** The concepts used in the hypothesis should be clearly defined, operationally if possible. Such definitions should be commonly accepted and easily communicable among the research scholars.

- **Hypothesis should have empirical referents.** The variables contained in the hypothesis should be empirical realities. In case these are not empirical realities then it will not be possible to make the observations. Being handicapped by the data collection, it may not be possible to test the hypothesis. Watch for words like ought, should, bad.

- **Hypothesis must be specific.** The hypothesis should not only be specific to a place and situation but also these should be narrowed down with respect to its operation. Let there be no global use of concepts whereby the researcher is using such a broad concept which may all be inclusive and may not be able to tell anything. For example somebody may try to propose the relationship between urbanization and family size. Yes urbanization influences in declining the size of families. But urbanization is such comprehensive variable which hide the operation of so many other factor which emerge as part of the urbanization process. These factors could be the rise in education levels, women's levels of education, women empowerment, emergence of dual earner families, decline in patriarchy, accessibility to health services, role of mass media, and could be more. Therefore the global use of the word 'urbanization' may not tell much. Hence it is suggested to that the hypothesis should be specific.

- **Hypothesis should be related to available techniques of research.** Hypothesis may have empirical reality; still we are looking for tools and techniques that could be used for the collection of data. If the techniques are not there then the researcher is handicapped. Therefore, either the techniques are already available or the researcher is in a position to develop suitable techniques for the study.

- **Hypothesis should be related to a body of theory.** Hypothesis has to be supported by theoretical argumentation. For this purpose the research may develop his/her theoretical framework which could help in the generation of relevant hypothesis. For the development of a framework the researcher shall depend on the existing body of knowledge. In such an effort a connection between the study in hand and the existing body of knowledge can be established. That is how the study could benefit from the existing knowledge and later on through testing the hypothesis could contribute to the reservoir of knowledge.

Lesson 8: REVIEW OF LITERATURE

A literature review is based on the assumption that knowledge accumulates and that we learn from and build on what others have done. Scientific research is a collective effort of many researchers who share their results with one another and who pursue knowledge as a community.
Today's studies build on those of yesterday. Researchers read studies to compare, replicate, or criticize them for weaknesses.

Goals of a Literature Review

Reviews vary in scope and depth. Different kinds of reviews are stronger at fulfilling different goals of review. The goals of review are:

1. *To demonstrate a familiarity with a body of knowledge and establish credibility.* A review tells the reader that the researcher knows the research in an area and knows the major issues. A good review increases a reader's confidence in the researcher's professional competence, ability, and background.

2. *To know the path of prior research and how a current research project is linked to it.* A review outlines the direction, ability, and background of research on a question and shows the development of knowledge. A good review places a research project in a context and demonstrates its relevance by making connections to a body of knowledge.

3. *To integrate and summarize what is known in an area*. A review pulls together and synthesizes different results. A good review points out areas where prior studies agree, where they disagree, and where major questions remain. It collects what is known to a point in time and indicates the direction for future research. No reinventing the wheel. No wastage of effort.

4. *To learn from others and stimulate new ideas*. A review tells what others have found so that a researcher can benefit from the efforts of others. A good review identifies blind alleys and suggests hypotheses for replication. It divulges procedures, techniques, and research designs worth copying so that a researcher can better focus hypotheses and gain new insights.

5. *Identification of variables.* Important variables that are likely to influence the problem situation are not left out of the study.

6. *Helps in developing theoretical framework.*

Types of Reviews

When beginning a review, researcher may decide on a topic or field of knowledge to examine, how much depth to go into, and the kind of review to conduct. There are six types of review:

Self-study reviews increase the reader's confidence. A review that only demonstrates familiarity with an area is rarely published but it often is part of an educational program. In

addition to giving others confidence in a reviewer's command of field, it has the side benefit of building the reviewer's self-confidence.

Context reviews place a specific project in the big picture. One of the goals of review is creating a link to a developing body of knowledge. This is a background or context review. It introduces the rest of a research and establishes the significance and relevance of a research question. It tells the reader how a project fits into the big picture and its implications for a field of knowledge. The review can summarize how the current research continues a developing line of thought, or it can point to a question or unresolved conflict in prior research to be addressed.

Historical review traces the development of an issue over time. It traces the development of an idea or shows how a particular issue or theory has evolved over time. Researchers conduct historical review only on the most important ideas in a field.

Theoretical reviews compare how different theories address an issue. It presents different theories that purport to explain the same thing, and then evaluates how well each accounts for findings. In addition to examining the consistency of predictions with findings, a theoretical review may compare theories for the soundness of their assumptions, logical consistency, and scope of explanation. Researchers also use it to integrate two theories or extend a theory to new issues. It sometimes forms a hybrid – the historical theoretical review.

Integrative review summarizes what is known at a point in time. It presents the current state of knowledge and pulls together disparate research reports in a fast growing area of knowledge.

Methodological reviews point out how methodology varies by study. In it researcher evaluates the methodological strength of past studies. It describes conflicting results and shows how different research designs, samples, measures, and so on, account for different results.

Where to find the Research Literature

- Computer: on line systems.
- Scholarly journals.
- Books – containing reports of original research, or collection of research articles. READERS or Book of Readings.
- Dissertations.
- Government documents.
- Policy reports and presented papers.
- Bibliographic indexes.

Referencing Electronic Sources:

- **Ahmad, B. (2005) *Technology and immediacy of information.* [on line] Available http://www.bnet.act.com**

Lesson 9: CONDUCTING A SYSTEMATIC LITERATURE REVIEW

Define and refine a topic

Prior to the review of literature have a good idea of the topic of your interest. Although, the new thoughts emerging out of the review of literature may help in refocusing the topic, still the researcher needs to have some clear research question that could guide him/her in the pursuit of relevant material. Therefore begin a literature review with a clearly defined, well focused research question and a plan. A good review topic should be as focused as a research question. For example "crime" as such may be too broad a topic. A more focus may be a specific "type of crime" or "economic inequality and crime rates." Often a researcher will not finalize a specific research question for a study until he or she has reviewed the literature. The review helps bring greater focus to the research question.

Design a search

The researcher needs to decide on the type of review, its extensiveness and the types of material to include. The key is to be careful, systematic, and organized. Set parameters on your search; how much time you will devote to it, how far back in time you will look, the maximum number of research reports you will examine, how many libraries you will visit, and so forth.
Also decide how to record the bibliographic citations for each reference. May be beginning a file folder or computer file in which you can place possible sources and ideas for new sources.

Locate research reports

Locating research reports depends on the type of report or "outlet" of research being searched. Use multiple search strategies in order to counteract the limitations of single search method.

Articles in Scholarly Journals. Most social and behavioral research is likely to be published in scholarly journals. These journals are the vehicles of communication in science. There are dozens of journals, many going back decades, each containing many articles. Locating the relevant articles is formidable task.
Many academic fields have "abstracts" or "indexes" for the scholarly literature. Find them in reference section of the library. (Many available on compute as well). Such indexes and abstracts are published regularly.
Another resource for locating articles is the computerized literature search. Researchers organize computerized searches in several ways – by author, by article title, by subject, or by keyword. A *keyword* is an important term for a topic that is likely to be found in a title. You will want to use six to eight keywords in most computer based searches and consider several synonyms.

Scholarly Books. Finding scholarly books on a subject can be difficult. The subject topics of a library catalog systems are usually incomplete and too broad to be useful. A person has to be well conversant with the library cataloging system.

Dissertations. A publication called *Dissertation Abstract International* lists most dissertations. It organizes dissertations by broad subject category, author, and date.

Government Documents. The "government documents" sections of libraries contain specialized lists of government documents.

Policy Reports and Presented Papers. The most difficult sources to locate are policy reports and presented papers. They are listed in some bibliographies of published studies; some are listed in the abstracts or indexes.

What to Record

After you locate a source, you should write down all details of the reference (full names of the authors, titles, volumes, issue, pages)

Write the Review

A literature review requires planning and good, clear writing, which requires lot of rewriting. Keep your purposes in mind when you write, and communicate clearly and effectively.

To prepare a good review, read articles and other literature critically. Skepticism is the norm of science. It means that you should not accept what is written simply on the basis of authority of its having been published. Question what you read, and evaluate it.

Critically reading research reports requires skills and take time and practice to develop. When reading an article, read carefully to see whether the introduction and title really fit with the rest of the article. Sometimes, titles, abstracts, or the introduction are misleading. They may not fully explain the research project's method and results.

The most critical areas of an article to read are the methods and results sections. Few studies are perfect. Researchers do not always describe the methods they used as fully as they should. Sometimes the results presented in tables or charts do not match what the researcher says. Some points may be over emphasized and others ignored. Check the conclusions, theses may not be consistent with the results.

What does a good review look like?

The author should communicate a review's purpose to the reader by its organization. The wrong way to write a review is to list a series of research reports with a summary of the findings of each. This fails to communicate a sense of purpose. It reads as a set of notes strung together. Perhaps the reviewer got sloppy and skipped over the important organizing step in writing the review.

The right way to write a review is to organize common findings or arguments together. A well accepted approach is to address the most important ideas first, to logically link statements or findings, and to note discrepancies or weaknesses in the present.

The writing process

Your audience:

Professional writers say: Always know for whom are you writing. This is because communication is more effective when it is tailored to a specific audience. You should write research report differently depending on whether the primary audience is the instructor, students, professional colleagues, practitioners, or the general public. It goes without saying that the writing should be clear, accurate, and organized.

Instructors assign reports for different reasons and may place requirements on how it is written. In general, instructors want to see writing an organization that reflects clear, logical thinking. Student reports should demonstrate a solid grasp of substantive and methodological concepts.

A good way to do this is to use technical terms explicitly when appropriate: they should not be use excessively and incorrectly.

Lesson 10: THEORETICAL FRAMEWORK

A theoretical framework is conceptual model of how one theorizes or makes logical sense of the relationships among several factors that have been identified as important to the problem under study. These factors which may also be called as variables may have been identified through such processes as interviews with informants, observations, and literature survey. The theoretical framework discusses the interrelationships among the variables that are considered to be integral to the dynamics of the situation being investigated. Developing such a conceptual framework helps us to postulate or hypothesize and test certain relationships and thus improve our understanding of the dynamics of situation.

From the theoretical framework, then, testable hypotheses can be developed to examine whether theory formulated is valid or not. The hypothesized relationships can thereafter be tested through appropriate statistical analysis.
Hence the entire research rests on the basis of the theoretical framework. Even if the testable hypotheses not necessarily generated, developing a good theoretical framework is central to examining the problem under investigation.
There is a relationship between the literature survey and the theoretical framework whereby the former provides a solid foundation for developing the latter. Literature survey helps in the identification of the relevant variables, as determined by the previous researches. This in addition to other logical connections that can be conceptualized forms the basis for the theoretical model. The theoretical framework elaborates the relationships among the variables, explains the theory underlying these relations, and describes the nature and direction of the relationships. Just as the literature survey sets the stage for a good theoretical framework, this in turn provides the logical base for developing useable hypotheses.
From the preceding discussion it can be concluded that a theoretical framework is none other than identifying the network of relationships among the variables considered important to the study of any given problem situation. Therefore, the theoretical framework offers the conceptual foundation for constructing the edifice of research that is to taken in hand.
Specifically a theoretical framework:

- Elaborates the relationship among the variables.
- Explains the logic underlying these relationships.
- Describes the nature, and direction of the relationships.

In the review of literature it is possible that you may come across a number of theories readily available for adoption as theoretical framework for the study under consideration. Theories are supposed to be generic whereby they could be applicable to different situations. Some concepts borrowed from such theories may have to be replaced with arguments, logic explicated, and the framework may be readily available. It is also possible that the researcher may combine more than one existing theory and come up with an entirely new framework, and in the process may develop new concepts as well.
However, in the absence of the readymade conceptual framework the researcher may venture to develop his/her own framework. Though, the researcher has to depend a lot on the existing body of literature for the identification of variables as well as for developing a rigorous logical argumentation for the interrelationships among different variables.
Whether the researcher uses a ready-made theoretical framework or explicates an entirely new one, there are some essential features that have to be taken into consideration. These features may be called as components of a theoretical framework.

The Components of the Theoretical Framework

A good theoretical framework identifies and labels the important variables in the situation that are relevant to the problem identified. It logically describes the interconnections among these variables. The relationships among the independent variables, the dependent variable(s), and if applicable, the moderating and intervening variables are elaborated.

The elaboration of the variables in the theoretical framework addresses the issues of why or how we expect certain relationships to exist, and the nature and direction of the relationships among the variables of interest. At the end, the whole discussion can be portrayed in a schematic diagram. There are six basic features that should be incorporated in any theoretical framework. These features are:

Make an inventory of variables:

For developing a framework it appears essential to identify the factors relevant to the problem under study. These factors are the empirical realities which can be named at some abstract level called concepts. The concepts taking more than one value are the variables. In other words the researcher makes *an inventory of relevant variables*. The variables considered relevant to the study should be clearly identified and labeled in the discussion.

Specify the direction of relationship:

If the nature and direction of relationship can be theorized on the basis of the findings of previous research, then there should be an indication in the discussion as to whether the relationship should be positive or negative.

Give a clear explanation of why we should expect the proposed relationships to exist;

There should be clear explanation of why we would expect these relationships to exist. The arguments could be drawn from the previous research findings. The discussions should state how two or more variables are related to one another. This should be done for the important relationships that are theorized to exist among the variables. It is essential to theorize logical relationship between different variables.

Make an inventory of propositions:

Stipulation of logical relationship between any two variables means the formulation of a proposition. If such relationships have been proposed between different variables, it will result in the formulation of a number of propositions. Let us call such a collection of propositions as *an inventory of propositions.* Each proposition is backed up by strong theoretical argumentation.

Arrange these propositions in a sequential order:

One proposition generates the next proposition, which generates the next following proposition, which in turn generates the next following proposition, and so on. This is an axiomatic way of the derivation of propositions. Resultantly it will provide us a sequentially arranged set of propositions which are interlinked and interlocked with each other. Theory, if you remember, is an interrelated set of propositions. Therefore, the present interrelated set of propositions relevant to a particular problem is in fact a

theoretical framework explaining the pathways of logical relationships between different variables.

Schematic diagram of the theoretical model be given:

A schematic diagram of the theoretical framework should be given so that the reader can see and easily comprehend the theorized relationships.

Example:

Research Question: Why middle class families decline in their size?

By following the guidelines discussed earlier let us develop a theoretical framework.

1. **Inventory of variables**: Education levels of the couples, age at marriage, working women, rationalism, exposure to mass media of communication, accessibility to health services, practicing of family planning practices, aspirations about the education of children, shift to nuclear families, mobility orientation.
2. **Specify the direction of relationship:** Higher the education higher the age at marriage. Higher the education of women greater the chances of their being career women. Higher the education more the rationalism. Higher the education more selective the exposure to mass media of communication. Higher the education more the accessibility to health services. Higher the education more the practicing of family planning practices. Higher the education of the parents the higher their aspirations about the education of their children. Higher the education of the couple greater the chances of shifting to nuclear families. Higher the education of the couples the higher their mobility orientation.
3. **Give a clear explanation of why we should expect the proposed relationships to exist.** For example higher the education higher the age at marriage. One could build up the argument like this: For purposes of getting high levels of education the youngsters spend about 16 years of their life in educational institutions. Let us say they complete their education at the age of 22 years. After completing education they spend 2-3 years for establishing themselves in their careers. During this period continue deferring their marriage. By the time they decide about their marriage they are about 25 years. Compare this age at marriage with the age at marriage of 16 years. Obviously with this higher age at marriage there is a reduction in the reproductive period of women. Similarly we can develop logic in support of other proposed relationships.
4. **Make an inventory of propositions.** The proposed relationships under item 2 about could be the examples of propositions.
5. **Arrange these propositions in a sequential order**. These propositions can be arranged sequentially.
6. **Schematic diagram of the theoretical model be given**

Voluntary Job Turnover:

- Inventory of variables:
- Equity of pay, job complexity, participation of decision making, job satisfaction, job performance, labor market conditions, number of organization, personal characteristics, expectation of finding an alternatives, intentions to quit, job turnover.
- Apply all the components of theoretical framework

Lesson 11: PROBLEM DEFINITION AND RESEARCH PROPOSAL

The research process consists of a number of steps. The first step in any research is selecting the topic, which could start from the broad area of interest. There is no set formula for the identification of a topic of research. The best guide is to conduct research on something that interest you. Nevertheless, there could be a variety of sources like: personal experiences, emerging curiosities from the issues being reported in the mass media, developments in the knowledge, solving problems (relating to an organization, a family, education, and economy), and "hot" issues pertaining to everyday life.

Broad area of interest could be 'labor unions.' As one could see from the literature, there is a large number of books and perhaps thousands of articles covering various aspects of labor unions. These articles and books have been written by researchers hailing from different subject specialties and using variety of perspectives. Therefore the researcher should narrow down the topic to some specific aspect of labor unions. For example, to what extent do the labor unions protect the rights of female workers?

Techniques for Narrowing a Topic into a Research Question

In order to narrow down the focus of research, try to get the background information from different sources. For example:

Examine the literature.

Published articles are an excellent source of ideas for research questions. They are Usually at an appropriate level of specificity and suggest research questions that focus on the following:

a. Explore unexpected findings discovered in previous research.
b. Follow suggestions an author gives for future research at the end of an article.
c. Extend an existing explanation or theory to a new topic or setting.
d. Challenge findings or attempt to refute a relationship.
e. Specify the intervening process and consider linking relations.

Talk over ideas with others.

f. Ask people who are knowledgeable about the topic for questions about it that they have thought of.
g. Seek out those who hold opinions that differ from yours on the topic and discuss possible research questions with them.

Apply to a specific context.

h. Focus the topic onto a specific historical period or time period.
i. Narrow the topic to a specific society or geographic unit.
j. Consider which subgroups or categories of people/units are involved and whether there are differences among them.

Define the aim or desired outcome of the study.

k. Will the research question be for an exploratory, explanatory, or descriptive study?
l. Will the study involve applied or basic research?

From the Research Question to Hypotheses

Tentative answers to the research question help in the identification of variables that could be used as explanatory factors for building up the argumentation in the development of propositions relevant to the topic. In our example the factors may be the prospects of membership of female workers of labor unions, actual membership, support of their men folk for membership, participation in the general body meetings, membership of the executive body of labor union, and so on. These very propositions become the basis of testable hypotheses. Similarly, the inventory of the propositions is helpful in developing the theoretical framework for the research project.

Problem Definition

After the interviews and the literature review, the researcher is in a position to narrow down the problem from its original broad base and define the issues of concern more clearly. It is critical that the focus of further research be unambiguously identified and defined. Problem definition or problem statement is a clear, precise, and succinct statement of the question or issue that is to be investigated with the goal of finding an answer or solution. For example the problem could pertain to (1) existing business problems where the manager is looking for a solution, (2) situation that may not pose any current problems but which the manager feels have scope for improvement, (3) areas where some conceptual clarity is needed for better theory building, or (4) situations in which a researcher is trying to answer a research question empirically because of interest in the topic.

Sponsored Researches

So far we have been discussing research project primarily from the perspective that a researcher is likely to carry the study on his/her own initiative. Although such an initiator can be a business manager or Organizational Management trying to arrest some of the issues in the organization, yet the actual researcher may be a hired consultant. In such a situation the researcher has to ascertain the decision maker's objectives. There might simply be some symptoms, and just like the iceberg principle, the dangerous part of many business problems is neither visible to nor understood by business managers. These symptoms are the management dilemmas which have to be translated into management question and then into research question(s). The management may hire the services of research specialists to do this assignment. As a result the management dilemmas get identified and delineated in the *Terms of Reference*, and consultants may be engaged to carry out the study. In such situations many of the steps (review of literature, theoretical framework, and hypotheses) that have been discussed earlier may be skipped. Certainly the management takes the research decisions keeping in view the urgency of the study, timing of the study, availability of the information, and more importantly the cost benefit equation of the study.

The Research Proposal

A research *proposal* is a document that presents a plan for a project to reviewers for evaluation. It can be a supervised project submitted to instructors as part of an educational degree (e.g. a Master's thesis or a Ph.D. dissertation) or it can be a research project proposed to a funding agency. Its purpose is to convince reviewers that the researcher is capable of successfully conducting the proposed research project. Reviewers have more confidence that a planned project will be successfully completed if the proposal is well written and organized, and carefully planned.

The proposal is just like a research report, but it is written before the research project begins. A proposal describes the research problem and its importance, and gives a detailed account of the methods that will be used and why they are appropriate.

A proposal for quantitative research has most of the parts of a research report: a title, an abstract, a problem statement, a literature review, a method or design section, and a bibliography. It lacks results, discussion, and conclusions section. The proposal has a plan for data collection and analysis. It frequently includes a schedule of the steps to be undertaken and an estimate of the time required for each step.

For funded projects the researchers need to show a track record of past success in the proposal, especially if they are the going to be the in charge of the project. Proposals usually include curriculum vitae, letters of support from other researchers, and record if past research.

Research Proposal Sections

Introduction
- Background of the study
- Objectives
- Significance

Research Design
- Data collection technique (survey, experiment, qualitative technique)
- Population
- Sample
- Tool of data collection
- Data Gathering
- Data processing and analysis

Report writing
Budget
Time Schedule
Team of Researchers

Lesson 12: THE RESEARCH PROCESS

Research task is usually treated as a sequential process involving several clearly defined steps. No one claims that research requires completion of each step before going to the next. Recycling, circumventing, and skipping occur. Some steps are begun out of sequence, some are carried out simultaneously, and some may be omitted. Despite these variations, the idea of sequence is useful for developing a project and for keeping the project orderly as it unfolds.

Various approaches suggest somewhat different steps – ranging from five steps to eleven steps. The variation may be due to purposes, and methods used by the researches, though some researchers may combine some of the steps. Also some writers may portray the same steps in a linear way; others may put them in a cyclical form. These steps can be:

1. Broad Problem Area

The process begins with a researcher selecting a *topic* – a general area of study or issue such as divorce, crime, aging, marketing, or powerful elites. A topic appears to be too broad for conducting research. The specific issues that need to be researched within the situation may not be identified at this stage. Such issues might pertain to (1) problem currently existing in an organizational setting that need to be solved (sexual harassment), (2) areas that a manager believes need to be improved in the organization (improving the existing policies), (3) a conceptual or theoretical issue that needs to tightened up for basic researcher or to understand certain phenomenon (conceptual definition of harassment), and (4) some research questions that a basic researcher wants to answer empirically (impact of harassment on the performance of the workers).

2. Preliminary Data Collection

This step may be considered as part of the **exploratory** research. An exploration typically begins with a search for published data and studies. Such sources can provide secondary data which becomes part of the background information (about the organization, groups of people, context of the issue). Some secondary sources of data are statistical bulletins, government publications, information published or unpublished, case studies, online data, web sites, and the Internet. In addition, the researchers often seek out people who are well informed on the topic, especially those who have clearly stated positions on controversial aspects of the problem. Such persons can be the professional researchers, or the informants to whom the issues relate. In certain situations it may be appropriate to have some focus group discussions with the relevant people. Such discussions help in the identification of variables and having clarification of the issue

3. Problem Definition

After having discussions with the professionals as well as with the persons to whom the issue relates, and the review of literature, the researcher is in a position to narrow down from its original broad base and define the issue clearly. Translate the broad issue into a research question. As part of the applied research convert the management dilemma into a management question, and then on to research question that fits the need to resolve the dilemma. The symptoms of a problem might help tracing the real problem. For example a productivity decline of workers may be an issue. The management may have tried to solve it by the

provision of incentive but did not work. The researcher may have to dig deep and find the possible factors like the morale and motivation of the workers having some other antecedents. There could be similar other broad issues which have to be narrowed down to research questions like:

1. To what extent has the new advertising campaign been successful in creating the high quality, consumer-centered corporate image that it was intended to produce?
2. Has the new packaging affected the sale of the products?
3. Will the day care centers affect the productivity of female workers?
4. Why the divorce rate is on the increase in Pakistan?
5. Why the family in Pakistan is changing?
6. What could be the impact of changing family patterns on the living of senior citizens?

4. Theoretical Framework

Consultations with the informants and professionals, and the review of literature should have helped in the identification of different factors that are considered to be relevant to the topic. The researcher has to make logical relationship among several factors identified earlier. This will help in the delineation of the theoretical framework. The theoretical framework discusses the interrelationships among the variables that are deemed to be integral to the dynamics of the situation being investigated. Developing such a conceptual framework helps to postulate or hypothesize and test certain relationships.
We have already discussed the components of a theoretical framework.

5. Generation of Hypotheses

Once we have identified the important variables relevant to an issue and established the logical reasoning in the theoretical framework, we are in a position to test whether the relationships that have been theorized do in fact hold true. By testing these relationships scientifically, we are in a position to obtain reliable information to determine the relationship among the variables. The results of these tests offer us part of the answers to the formulated research questions, whether these relate basic research or to applied research.

6. Research Design

Research design is a master plan specifying the methods and procedures for collecting and analyzing the needed information. It is a framework or the blueprint that plans the action for research project. The objectives of the study determined during the early stages of the research are included in the design to ensure that the information collected is appropriate for solving the problem. The researcher must specify the sources of information, and the research method or technique (survey or experiment, for example) to be followed in the study.

Broadly there are six basic research methods for descriptive and causal research: surveys, experiments, observation, communication analysis (content analysis), case study, focus group discussion. Use of secondary data may be another method where the data may have been collected by using any of the six basic methods listed earlier. The objectives of the research, the available data sources the urgency of the decision and the cost of obtaining the data will determine the method to be is chosen.

Surveys: The most common method of generating primary data is through surveys. Survey is a research technique in which information is gathered from a sample of people using a questionnaire. The task of writing a list of questions and designing the exact format of the printed or written questionnaire is an essential aspect of the development of survey research design.

Research investigators may choose to contact the respondents in person, by telephone, by mail, or on the internet. Each of these techniques has advantages and disadvantages. The researcher's task is to choose the most appropriate one for collecting the information needed.

Experiments: Experiments hold the greatest potential for establishing cause-and-effect relationships. The use of experimentation allows investigation of changes in one variable, such as productivity, while manipulating one or more variables, perhaps social rewards or monetary rewards, under controlled conditions. Ideally, experimental control provides a basis for isolating causal factors, because outside (or exogenous) influences do not come into play.

An experiment controls conditions so that one or more variables can be manipulated in order to test a hypothesis. In the laboratory experiments, compared with the field experiment, it is possible to create controlled conditions for the manipulation of one or more variables and see its effect on the dependent variable by holding the extraneous factors constant.

Observation techniques: **O**bservation can be non-participant or participant. In many situations the objective of a research project is merely to record what can be observed – for example the number of automobiles that pass the proposed site for a gas station. This can be mechanically recorded or observed by any person. This is an unobtrusive study without a respondent's direct participation. In participant observation studies, the researcher takes part in the day to day activities, interviews them, and makes observations. Such a study generates qualitative data and lasts for a long duration.

Communication analysis: It is also called content analysis which means gathering and analyzing the content of the text. The content refers to words, meanings, pictures, symbols, ideas, themes, or any message that can be communicated. The text is anything written, visual, or spoken that serves as a medium of communication. It includes books, newspapers, advertisements, speeches, official documents, films or videotapes, photographs, articles of clothing, or works of art.

Case study: It is an in-depth analysis of a unit which could be an individual person, a couple, a group, or an organization. It is more like a clinical analysis in retrospect; starting from the effect and tracing the reasons back in time. The researcher takes the history of the situation and makes use of any other relevant information about the case to identify the factors leading to the present situation.

Focus group discussions: It is a discussion of an issue by 6-12 persons with a moderator for 1-2 hours. The issue can be a public concern, a product, a television program, a political candidate, or a policy. Focus groups are useful in exploratory research or to generate new ideas for hypotheses, and the interpenetration of results. It produces qualitative information which may compliment the quantitative data.

Researchers try to evaluate different research designs and select the most appropriate one that helps in getting the relevant information. There is no one best research design for all situations.

7. Data Collection, Data Processing, and Analysis

Data collection is integral part of the research design, though we are dealing it separately. Data collection is determined by the research technique selected for the project. Data can be collected in a variety of ways, in different settings – field or lab – and from different sources. It could include *interviews* – face to face interviews, telephone interviews, computer-assisted interviews, and interviews through electronic media; *questionnaires* that either personally administered, sent through mail, or electronically administered; *observation* of individuals and events which could be participant or non-participant.
Once the fieldwork has been completed, the data must be converted into a format that will answer the research questions and or help testing the hypotheses. Data processing generally begins with the editing and coding of the data. Editing involves checking the data collection forms for omissions, legibility, and consistency in classification. The editing process corrects problems such as interviewer errors prior to the data are transferred to a computer. Coding may be the assigning of numbers or symbols before it goes to the computer. The computer can help in making tables and the application of different statistics.

Analysis is the application of reasoning to understand and interpret the data that have been collected. The appropriate analytical technique is to be determined by the research design, and the nature of the data collected.

8. Testing the Hypotheses; Answering the Research Questions

The analysis and interpretation of the data shall be the means to testing the formulated hypotheses as well as finding answers to the research questions. In case of applied research, the research should be helpful in finding solutions to the problems of the organization or society. Making recommendations may also be part of this process.

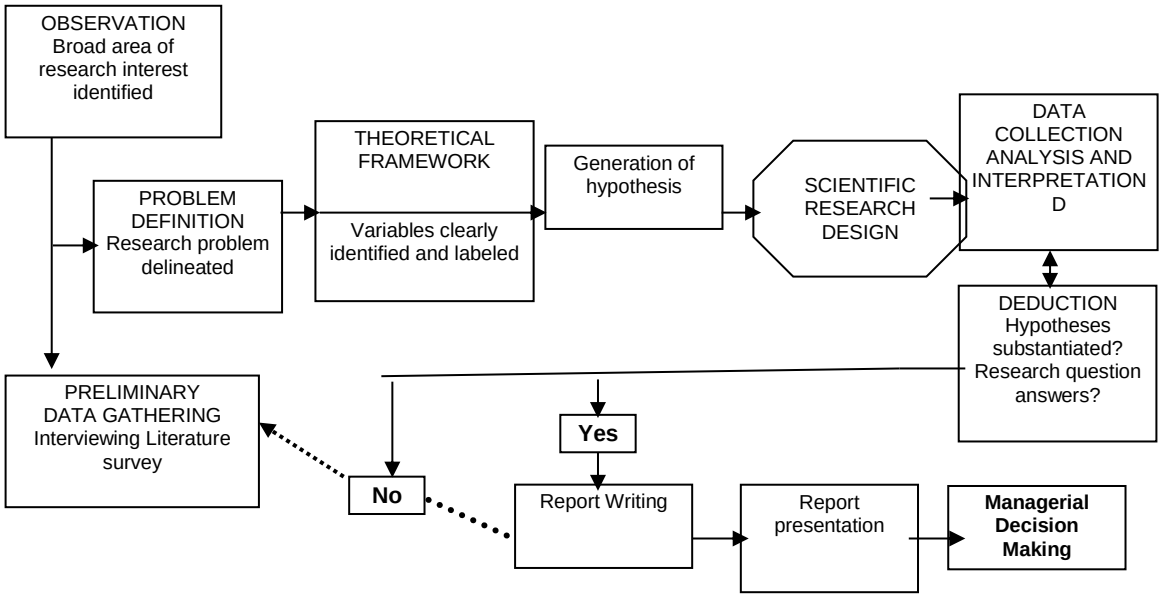
9. Report Writing

The research report should communicate the research findings effectively. All too often the report is a complicated statement of the study's technical aspects and sophisticated research methods. If the study has been conducted for a business management, often the management is not interested in detailed reporting of the research design and statistical findings but wants only the summary of the findings. Research is only as good as the applications made of it. Nevertheless, the research report becomes a historical document, a record that may be referred to in later studies. In case of research for academic purposes the research findings become part of the body of knowledge, and the research may producing research papers for publication in professional journals.

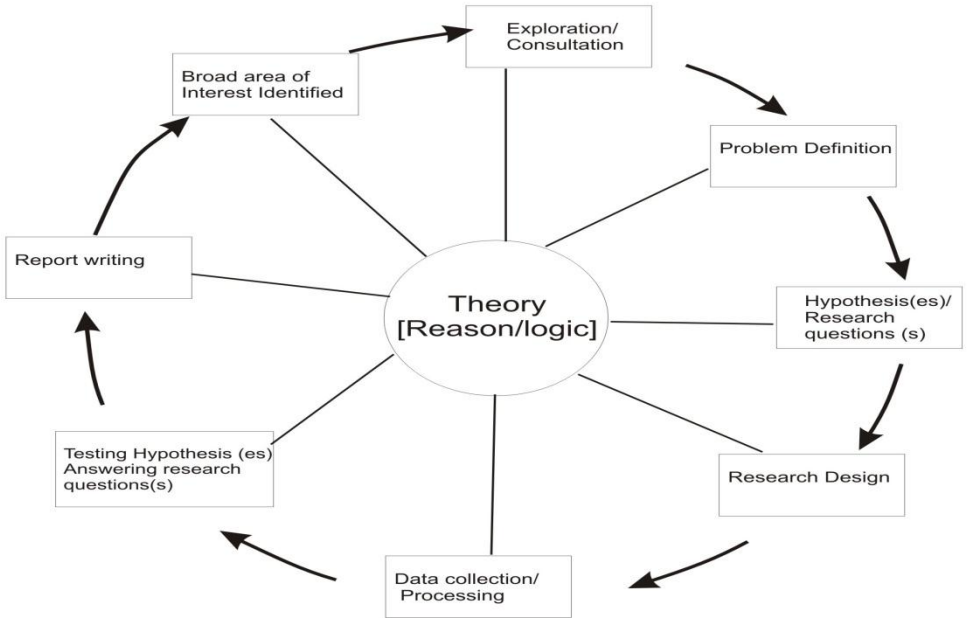
The report has to be presented in the format as it may have been part of the terms of reference if it is a sponsored study. In case of a dissertation the Universities have some standardized styles which have to be followed. Similarly the research papers have to be prepared in accordance with the format specified by the professional journals.

The graphic presentation of the research process may be like this:

The Research Process



STEPS IN SOCIOLOGICAL INVESTIGATION



Lesson 13: ETHICAL ISSUES IN RESEARCH

Ethics are norms or standards of behavior that guide moral choices about our behavior and our relationships with others. The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. This objective is usually achieved. However, unethical activities are pervasive and include violating nondisclosure agreements, breaking respondent confidentiality, misrepresenting results, deceiving people, invoicing irregularities, avoiding legal liability, and more.

As discussed earlier, ethical questions are philosophical questions. There is no general agreement among philosophers about the answers to such questions. However the rights and obligations of individuals are generally dictated by the norms of society. Societal norms are codes of behavior adopted by a group; they suggest what a member of a group ought to do under given circumstances. Nevertheless, with changing situations people continue differing with each other whereby societal norms may undergo changes. Codes and regulations guide researchers and sponsors. Review boards and peer groups help researchers examine their research proposals for ethical dilemmas. Responsible researchers anticipate ethical dilemmas and attempt to adjust the design, procedures, and protocols during the planning process rather than treating them as afterthought. Ethical research requires personal integrity from the researcher, the project manager, and the research sponsor.

Codes of ethic applicable at each stage of the research

Goal

To ensure that no one is harmed or suffers adverse consequences from research activities

Unethical activities

- Violating nondisclosure agreements.
- Breaking respondent confidentiality.
- Misrepresenting results.
- Deceiving people.
- Invoicing irregularities.
- Avoiding legal liability.

Ethical Issues

- Remain to be issues.
- Local norms suggest what ought to be done under the given circumstances.
- Codes of ethics developed to guide researchers and sponsors.
- Review Boards and peer groups help sorting out ethical dilemmas.

Anticipate ethical dilemmas

- Adjust the design, procedures, and protocols accordingly.
- Research ethics require personal integrity of the researcher, the project manager, and research sponsor.

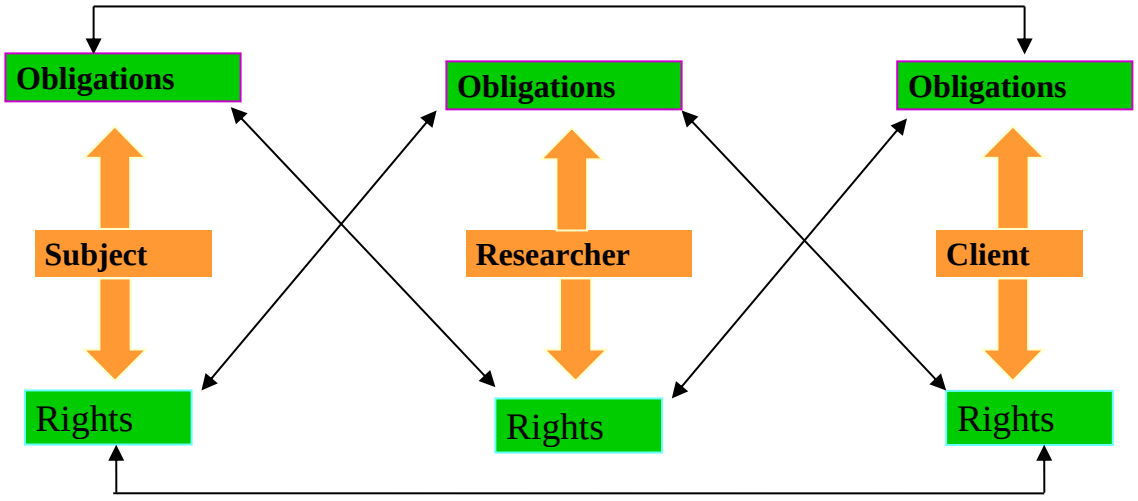
Parties in Research

- Mostly three parties:
- The researcher
- The sponsoring client (user)
- The respondent (subject)
- Interaction requires ethical questions.
- Each party expects certain rights and feels certain obligations.

General Rights and Obligations of Parties Concerned

In most research situations, three parties are involved: the *researcher*, the *sponsoring client (user)*, and the *respondent (subject).* The interaction of each of these parties with one or both of the other two identifies a series of ethical questions. Consciously or consciously, each party expects certain rights and feels certain obligations towards the other parties.

Interaction of rights and obligations of parties in research



Ethical Treatment of Participants

When ethics are discussed in research design, we often think first about protecting the rights of the participant, respondent, or subject. Whether data are gathered in an experiment, interview, observation, or survey, the respondent has many rights to be safeguarded. In general the research must be designed so that a respondent does not suffer physical harm, discomfort, pain, embarrassment, or loss of privacy. To safeguard against these, the researcher should follow three guidelines;

1. Explain study benefits.
2. Explain respondent rights and protections.
3. Obtain informed consent.

Benefits:

Whenever direct contact is made with a respondent, the researcher should discuss the study's benefits, being careful to neither overstate nor understate the benefits. An interviewer should begin an introduction with his or her name, the name of the research organization, and a brief description of the purpose and benefit of the research. This puts the respondent at ease, lets them know to whom they are speaking, and motivates them to answer questions truthfully. In short, knowing why one is being asked questions improves cooperation through honest disclosure of purpose. Inducements to participate, financial or otherwise, should not be disproportionate to the task or presented in a fashion that results in coercion.

Sometimes the actual purpose and benefits of the study or experiment must be concealed from the respondents to avoid introducing bias. The need for concealing objectives leads directly to the problem of deception.

Lesson 14: ETHICAL ISSUES IN RESEARCH (Cont.)

Ethics are norms or standards of behavior that guide moral choices about our behavior and our relationships with others. The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. This objective is usually achieved. However, unethical activities are pervasive and include violating nondisclosure agreements, breaking respondent confidentiality, misrepresenting results, deceiving people, invoicing irregularities, avoiding legal liability, and more.

Deception*:*

Deception occurs when the respondents are told only part of the truth or when the truth is fully compromised. Some believe this should never occur. Others suggest two reasons for deception: (1) to prevent biasing the respondents before the survey or experiment and (2) to protect the confidentiality of a third party (e.g. the sponsor). Deception should not be used in an attempt to improve response rates.

The benefits to be gained by deception should be balanced against the risks to the respondents. When possible, an experiment or interview should be redesigned to reduce the reliance on deception. Use of deception is inappropriate unless deceptive techniques are justified by the study's expected scientific, educational, or applied value and equally effective alternatives that do not use deception are not feasible. And finally, the respondents must have given their informed consent before participating in the research.

Informed Consent:

Securing informed consent from respondents is a matter of fully disclosing the procedures of the proposed survey or other research design before requesting permission to proceed with the study. There are exceptions that argue for a signed consent form. When dealing with children, it is wise to have a parent or other person with legal standing sign a consent form.

If there is a chance the data could harm the respondent or if the researchers offer any limited protection of confidentiality, a signed form detailing the types of limits should be obtained. For most business research, oral consent is sufficient.

In situations where respondents are intentionally or accidentally deceived, they should be debriefed once the research is complete.

Debriefing:

It involves several activities following the collection of data:

- Explanation of any deception.
- Description of the hypothesis, goal, or purpose of the study.
- Post study sharing of the results.
- Post study follow-up medical or psychological attention.

First, the researcher shares the truth of any deception with the participants and all the reasons for using deception in the context of the study's goals. In cases where severe reactions occur, follow-up medical or psychological attention should be provided to continue to ensure the participants remain unharmed by the research.

Even when the research does not deceive the respondents, it is a good practice to offer them follow-up information. This retains the goodwill of the respondent, providing an incentive to participate in future research projects. For surveys and interviews, respondents can be offered a brief report of the findings. Usually they would not ask for additional information.
For experiments, all participants should be debriefed in order to put the experiment in context. Debriefing usually includes a description of the hypothesis being tested and the purpose of the study. Participants who were not deceived still benefit from the debriefing session. They will be able to understand why the experiment was created. The researchers also gain important insight into what the participants thought about during and after the experiment.

To what extent do debriefing and informed consent reduce the effects of deception? Research suggests that the majority of the respondents do not resent temporary deception and may have more positive feelings about the value of the research after debriefing than those who didn't participate in the study.

Rights to Privacy:

All individuals have right to privacy, and researchers must respect that right. The privacy guarantee is important not only to retain validity of the research but also to protect respondents. The confidentiality of the survey answers is an important aspect of the respondents' right to privacy.

Once the guarantee of confidentiality is given, protecting that confidentiality is essential. The researcher protects the confidentiality in several ways;

- Obtaining signed nondisclosure documents.
- Restricting access to respondent identification.
- Revealing respondent information only with written consent.
- Restricting access to data instruments where the respondent is identified.
- Nondisclosure of data subsets.

Privacy is more than confidentiality. A **right to privacy** means one has the right to refuse to be interviewed or to refuse to answer any question in an interview. Potential participants have a right to privacy in their own homes including not admitting researchers and not answering telephones. To address these rights, ethical researchers do the following:

- Inform respondents of their right to refuse to answer any questions or participate in the study.
- Obtain permission to interview respondents.
- Schedule field and phone interviews.
- Limit the time required for participation.
- Restrict observation to public behavior only.

The obligation to be truthful:

When a subject willingly agrees to participate, it is generally expected that he or she will provide truthful answers. Honest cooperation is main obligation of the respondent or the subject.

Ethics and the Sponsor

There are also ethical considerations to keep in mind when dealing with the research client or sponsor has the right to receive ethically conducted research.

Confidentiality of Sponsor

Some sponsors wish to undertake research without revealing themselves. They have a right to several types of confidentiality, including sponsor nondisclosure, purpose nondisclosure, and findings nondisclosure.

Companies have the right to dissociate themselves from sponsorship of a research project. This type of confidentiality is called **sponsorship nondisclosure.** Due to sensitive nature of the management dilemma or the research question, sponsor may hire an outside consulting or research firm to complete research project. This is often done when a company is testing a new product idea, to avoid potential consumers from being influenced by company's current image or industry standing.

Purpose nondisclosure involves protecting the purpose of the study or its details. A research sponsor may be testing a new idea that is not yet patented and may not want the competition to know its plans. It may be investigating employee complaints and may not want to spark union activity. Finally, even if a sponsor feels no need to hide its identity or the study's purpose, most sponsors want the research data and findings to be confidential; at least until the management decision is made. Thus sponsors usually demand and receive **findings nondisclosure** between themselves or their researchers and any interested but unapproved parties.

Right to Quality Research

An important ethical consideration is the sponsor's **right to quality** research. This right entails:

- Providing research design appropriate for the research question.
- Maximizing the sponsor's value for the resources expended.
- Providing data handling and reporting techniques appropriate for the data collected.

Sponsor's Ethics

Occasionally, research specialists may be asked by the sponsors to participate in unethical behavior. Compliance by the researcher would be a breach of ethical standards. Some examples to be avoided are;

- Violating respondent confidentiality.
- Changing data or creating false data to meet the desired objective.
- Changing data presentation or interpretations.
- Interpreting data from a biased perspective.
- Omitting sections of data analysis and conclusions.
- Making recommendations beyond the scope of data collected.

Researchers and Team Members

Another ethical responsibility of researchers is their team's safety as well as their own. The responsibility for ethical behavior rests with the researcher who, along with assistants, is charged with protecting the anonymity of both the sponsor and the respondent.

Safety: It is the researcher's responsibility to design a project so the safety of all interviewers, surveyors, experimenters, or observers is protected. Several factors may be important to consider in ensuring a researcher's **right to safety.**

Ethical behavior of Assistants: Researchers should require ethical compliance from team members just as sponsors expect ethical behavior from researcher. Assistants are expected to carry out the sampling plan, to interview or observe respondents without bias, and to accurately record all necessary data.

Protection of Anonymity: Researchers and assistants should protect the confidentiality of the sponsor's information and anonymity of the respondents. Each researcher handling data should be required to sign a confidentiality and nondisclosure statement.

Professional Standards: Various standards of ethics exist for the professional researcher. Many corporations, professional associations, and universities have **code of ethics.** These codes of ethic have to be enforced.

Lesson 15: MEASUREMENT OF CONCEPTS

In everyday usage, measurement occurs when an established yardstick verifies the height, weight, or another feature of a physical object. How well you like a song, a painting, or the personality of a friend is also measurement. In a dictionary sense, to measure is to discover the extent, dimensions, quantity, or capacity of something, especially by comparison with a standard. We measure casually in daily life, but in research the requirements for measurement are rigorous.

Certain things lend themselves to easy measurement through the use of appropriate instruments, as for example, physiological phenomena pertaining to human beings such as blood pressure, pulse rates, and body temperature, as well as certain physical attributes such as height and weight. But when we get into the realm of people's subjective feelings, attitudes, ideology, deviance, and perceptions, the measurement of these factors or variables becomes difficult. Like the natural scientist who invents indirect measures of the "invisible" objects and forces of the physical world (magnetism – the force that moves a metal toward the magnet), the social researcher devises measures for difficult- to-observe aspects of the social world. For example, suppose you heard a principal complain about teacher morale in a school. Teacher morale is an empirical reality, and we can create some instrument for its measurement.

Measurement in Quantitative and Qualitative Research

Both qualitative and quantitative researchers use careful, systematic methods to gather high quality data. Yet, differences in the styles of research and the types of data mean they approach the measurement process differently. Designing precise ways to measure variables is a vital step in planning a study for quantitative researchers. Qualitative researchers use wider variety of techniques to measure and create new measures while collecting data. The two approaches to measurement have three distinctions.

One difference between the two styles involves timing. Quantitative researchers extensively think about variables and convert them into specific actions during a planning stage that occurs before and separate from gathering or analyzing data. Measurement for qualitative researchers occurs in the data collection process, and only a little occurs in a separate, planning stage prior to data gathering.

A second difference involves the data itself. Quantitative researchers want to develop techniques that can produce quantitative data (i.e. data in the form of numbers). Thus, the researcher moves from abstract ideas, or variables, to specific data collection techniques to precise numerical information produced by the techniques. The numerical information is an empirical representation of the abstract ideas. Data for qualitative researchers sometimes is in the form of numbers; more often it includes written or spoken word, actions, sounds, symbols, physical objects, or visual images. The qualitative researcher does not convert all observations into a single, common medium such as numbers. Instead he or she develops many flexible, ongoing processes to measure that leaves the data in various shapes, sizes, and forms.

All researchers combine ideas and data to analyze the social world. In both research styles, data are empirical representation of concepts, and measurement is a process that links data to concepts.

A third difference is how the two styles make such linkages. Quantitative researchers contemplate and reflect on concepts before they gather data. They construct measurement techniques that bridge concepts and data. The measurement techniques define what the data will be and are directions for gathering data.
Qualitative researchers also reflect on ideas before data collection, but they develop many, if not most, of their concepts during data collection activities. Researchers start gathering data and creating ways to measure based what they encounter. As they gather data, they reflect on the process and develop new ideas. The ideas give them direction and suggest new ways to measure.

Here we shall focus on quantitative measurement. Here measurement consists of assigning numbers to empirical events in compliance with set rules. This definition implies that measurement is a three-part process:

1. Selecting observable empirical events.
2. Developing a set of mapping rules: a scheme for assigning numbers or symbols to represent aspects of the event being measured.
3. Applying the mapping rule(s) to each observation of that event.

Assume you are studying people who attend an auto show where all year's new models are on display. You are interested in learning the male-to female ratio among attendees. You observe those who enter the show area. If a person is female, you record an F; if male, an M. Any other symbols such as 0 and 1 may also be used if you know what group the symbol identifies.
Researchers might also want to measure the desirability of the styling of the new Espace van. They interview a sample of visitors and assign, with a different mapping rule, their opinions to the following scale:

What is your opinion of the styling of the Espace van?

Very desirable 5_____4_____3_____2_____1 Very undesirable

We can assign a weight-age (score) like:

5 if it is very desirable
4 if desirable
3 if neither
2 if undesirable
1 if very undesirable.

All measurement theorists would call such opinion rating scale as a form of measurement.

What is measured?

Variable being studied in research may be classified as objects or as properties. **Objects** include the things of ordinary experience, such as tables, people, books, and automobiles. Objects also include things that are not as concrete, such as genes, attitudes, neutrons, and peer group pressures. **Properties** are the characteristics of the objects. A person's physical properties may be stated in terms of weight, height, and posture. Psychological properties include attitudes, intelligence, motivation, perceptions, etc. Social properties include

leadership ability, class affiliation, or status. These and many other properties of an individual can be measured in a research study.

In a literal sense, researchers do not measure either objects or properties. They measure indicants of the properties or indicants of the properties of the objects. The properties like age, years of experience, and the number of calls made per week are easier to indicate and there is expected to be lot of agreement.

In contrast, it is not easy to measure properties like "motivation," "ability to stand stress," "problem-solving ability," and "persuasiveness." Since each property cannot be measured directly, one must infer its presence or absence by observing some indicant or pointer measurement. When you begin to make these inferences, there is often disagreement about how to operationalize the indicants.

The preceding discussion suggests two types of variables: one lends itself to objective and precise measurement; the other is more nebulous and does not lend itself to accurate measurement because of its subjective nature. However, despite the lack of physical measuring devices to measure the latter type, there are ways to tapping the subjective feelings and perceptions of individuals. One technique is to reduce the abstract notions, or concepts such as motivation, involvement, satisfaction, buyer behavior, stock market exuberance, and the like, to observable behavior and characteristics. In other words, the abstract notions are broken down into observable characteristic behavior. Reducing the abstract concepts to render them measurable in a tangible way is called operationalizing the concepts.

Parts of the Measurement Process

When a researcher measures, he or she takes a concept, idea, or construct and develops a measure (i.e. a technique, a process, a procedure) by which he or she can observe the idea empirically. Quantitative researchers primarily follow a deductive route. To begin with the abstract idea, follow with a measurement procedure, and end with empirical data that represent the ideas. Qualitative researchers primarily follow inductive route. They begin with empirical data, follow with abstract ideas, follow with processes relating with ideas and data, and end with a mixture of ideas and data.

Researchers use two processes: conceptualization and operationalization in measurement.

a. Conceptualization

Conceptualization is the process of taking a construct and refining it by giving it a conceptual or theoretical definition. A conceptual definition is definition in abstract, theoretical terms. It refers to other ideas or constructs. There is no magical way to turn a construct into a precise conceptual definition. It involves thinking carefully, observing directly, consulting with others, reading what others have said, and trying possible definitions.

A good definition has one clear, explicit, and specific meaning. There is no ambiguity or vagueness in the concepts (e.g. street gang, morale, motivation, social class, consumer satisfaction). A single construct can have several definitions, and people may disagree over definitions. Conceptual definitions are linked to theoretical frameworks and to value positions. For example, a conflict theorist may define *social class* as the power and property a group of

people in society has or lacks. A structural functionalist defines it in terms of individuals who share a social status, life-style, or subjective identification. Although people disagree over definitions, the researcher should always state explicitly which definition he or she is using.

Before you can measure, you need a concept. You also need to distinguish what you are interested in from other things. The idea that you first need a construct or concept of what is to be measured simply makes sense. How can you observe or measure something unless you know what you are looking for? For example, we want to measure teacher morale. We first define *teacher morale*. What does the construct *morale* mean? As a variable construct, it takes on different values – high versus low or good versus bad morale. Next we create a measure of this construct. This could take the form of survey questions, an examination of school records, or observations of teachers. Also we distinguish morale from other things in the answers to survey questions, school records, or observations.

How can we develop a conceptual definition of *teacher morale*, or at least a tentative working definition to get started? Look in the everyday understanding of morale – something vague like "how people feel about things." Also look in the dictionary, which gives definitions like "confidence, spirit, zeal, cheerfulness, esprit de corps, and mental condition towards something." Look into the review of literature and see how other researchers have defined this concept. In this effort we collect various definitions, parts of definitions, and related ideas, whereby we draw the boundaries of the core idea.

We find that most of these definitions say that morale is a spirit, feeling, or mental condition toward something, or a group feeling. But we are interested in *teacher* morale. We can ask teachers to specify as what does this construct mean to them? One strategy is to make a list of examples of high or low teacher morale. High teacher morale includes saying positive things about the school, not complaining about extra-work or enjoying being with students. Low morale includes complaining a lot, not attending school events unless required to, or looking for other jobs.

Morale involves a feeling toward something else; a person has morale with regard to something. A list of various "somethings" toward which teachers have feelings (e.g. students, parents, pay, the school administration, other teachers, the profession of teaching). Are there several kinds of teacher morale or all these "somethings" aspects of one construct? We have to decide whether morale means a single, general feeling with different parts or dimensions, or several distinct feelings.

What unit of analysis does our construct apply to: a group or an individual? Is morale a characteristic of an individual, of a group, or of both?

A researcher must distinguish the construct of interest from related constructs. How is our construct of teacher morale similar to or different from related concepts? For example, does *morale* differ from *mood*? We decide that mood is more individual and temporary than morale. Morale is a group feeling that includes positive or negative feelings about the future as well as other beliefs and feelings.

Who is a teacher? We have to decide.

b. Operationalization

Operationalization is the process of linking the conceptual definition to a specific set of measurement techniques or procedures. It links the language of theory with the language of empirical measures. Theory is full of abstract concepts, assumptions, relationships, definitions, and causality. Empirical measures describe how people concretely measure specific variables. They refer to specific operations or things people use to indicate the presence of a construct that exists in observable reality. Operationalization is done by looking at the behavioral dimensions, facets, or properties denoted by the concept. These are then translated into observable elements so as to develop an index of measurement of the concept. Operationally defining a concept involves a series of steps.

Lesson 16: MEASUREMENT OF CONCEPTS (CONTINUED)

b. Operationalization

Operationalization is the process of linking the conceptual definition to a specific set of measurement techniques or procedures. It links the language of theory with the language of empirical measures. Theory is full of abstract concepts, assumptions, relationships, definitions, and causality. Empirical measures describe how people concretely measure specific variables. They refer to specific operations or things people use to indicate the presence of a construct that exists in observable reality. Operationalization is done by looking at the behavioral dimensions, facets, or properties denoted by the concept. These are then translated into observable elements so as to develop an index of measurement of the concept. Operationally defining a concept involves a series of steps. Here is an example.

Operational definition: Dimensions and Elements → an example

Let us try to operationally define **job satisfaction,** a concept of interest to educators, managers, and students alike. What behavioral dimensions or facets or characteristics would we expect to find in people with high job satisfaction? Let us first of all have a conceptual definition of job satisfaction. We can start it like this:

- Employees' feelings toward their job.
- Degree of satisfaction that individuals obtain from various roles they play in an organization.
- A pleasurable or positive emotional feeling resulting from the appraisal of one's job or job experience.
- Employee's perception of how well the job provides those things ('some things') that are important. These things are the dimensions of job satisfaction.

Dimensions of job satisfaction:

For measuring job satisfaction it is appropriate to look at this concept from different angles relating with work. While employed in an organization the workers might be looking for many "things." Each of these things may be considered as a dimension; a person may be highly satisfied on one dimension and may be least satisfied on the other one. Those things that have usually been considered important at the place of work can be:

- The work itself.
- Pay/fringe benefits.
- Promotion opportunities.
- Supervision.
- Coworkers.
- Working conditions.

On each dimension the researcher has to develop logical arguments showing how this particular aspect (thing) relating to a worker's job is important whereby it has a bearing on his/her job satisfaction.

Elements of job satisfaction:

It means breaking each dimension further into actual patterns of behavior that would be exhibited through the perception of the workers in an organization. Here again the researcher shall develop logical rationale for using a particular element for measuring a specific dimension. For example let us look at each dimension and some of the corresponding elements:

- **Work itself: Elements →** Opportunities to learn, sense of accomplishment, challenging work, routine work.
- **Pay/fringe benefits: Elements →** Pay according to qualifications, comparison with other organizations, annual increments, and availability of bonuses, old age benefits, insurance benefits, and other allowances.
- **Promotion opportunities: Elements →** Mobility policy, equitable, dead end job.
- **Supervision: Elements →** Employee centered employee participation in decisions.
- **Coworkers: Elements →** Primary group relations, supportive attitude, level of cohesiveness.
- **Working conditions: Elements →** Lighting arrangements, temperature, cleanliness, building security, hygienic conditions, first aid facility, availability of canteen, availability of toilet facilities, availability of place for prayer.

On each element ask question (s), make statements. Look into the scalability of questions. The responses can be put on a scale indicating from high satisfaction to least satisfaction. In many cases the responses are put on a five point scale (usually called Likert scale).

Lesson 17: MEASUREMENT OF CONCEPTS (CONTINUED)

STATEMENTS:

No.	Statements	S. Agree	Agree	Undecided	Disagree	S. Disagree
1	I have a good opportunity for advancement in my job					
2	I feel very comfortable with my co-workers					
3	My pay is adequate to meet my necessary expenses					
4	My work gives me a sense of accomplishment					
5	My boss is impolite and cold					
6	My job is a dead-end job					
7	The company of my co-workers is boring					
8	Pay at my level is less as compared to other organizations					
9	Most of the time I am frustrated with my work					
10	My boss praises good work and is supportive					
11	There is a chance of frequent promotions in my job					
12	My co-workers are a source of inspiration for me					
13	I receive reasonable annual increments					
14	My work is very challenging to me					
15	My boss is adept in his work					
16	We have an unfair promotion policy in our organization					

No.	Statements	S. Agree	Agree	Undecided	Disagree	S. Disagree
17	Working style of my co-workers is different from mine					
18	The old-age benefits are quite adequate					
19	Most of the time I do routine work					
20	My boss does not delegate powers					
21	Opportunity for promotion is some-what limited here					
22	My co-workers try to take credit of my work					
23	My pay is commensurate with my qualification					

Scales and Indexes

Scales and indexes are often used interchangeably. Social researchers do not use a consistent nomenclature to distinguish between the two.

A scale is a measure in which a researcher captures the intensity, direction, level, or potency of a variable construct. It arranges responses or observations on a continuum or in series of categories. A scale can use a single indicator or multiple indicators.

An index is a measure in which a researcher adds or combines several distinct indicators of a construct into a single score. The composite scores is often a simple sum of the multiple indicators. Indexes are often measured at the interval or ratio level.

Researchers sometimes combine the features of scales and indexes in a single measure. This is common when a researcher has a several indicators that are scales (i.e. that measure intensity or direction). The researcher then adds these indicators together to yield a single score, thereby creating an index.

Types of Scales

A scale refers to any series of items that are arranged progressively according to value or magnitude, into which an item can be placed according to its quantification. In other words, a scale is a continuous spectrum or series of categories.

It is traditional to classify scales of measurement on the basis of the mathematical comparisons that are allowable with these scales. Four types of scales are nominal, ordinal, interval, and ratio.

- **Nominal Scale**

A nominal scale is the one in which the numbers or letters assigned to objects serve as labels for identification or classification. This measurement scale is the simplest type. With nominal

data, we are collecting information on a variable that naturally or by design can be grouped into two or more categories that are mutually exclusive, and collectively exhaustive.

Nominal scales are the least powerful of the four scales. They suggest no order or distance relationship and have no arithmetic origin. Nevertheless, if no other scale can be used, one can almost always one set of properties into a set of equivalent classes.

- **Ordinal Scale**

Ordinal scales include the characteristics of the nominal scale plus an indicator of order. If *a* is greater than *b* and *b* is greater than *c*, then *a* is greater than *c*. The use of ordinal scale implies a statement of "greater than" or "less than" without stating how much greater or less. Other descriptors can be: "superior to," "happier than," "poorer than," or "above."

- **Interval Scale**

Interval scales have the power of nominal and ordinal scales plus an additional strength: they incorporate the concept of equality of interval (the distance between 1 and 2 equals the distance between 2 and 3). For example, the elapsed time between 3 and 6 A. M. equals the time between 4 and 7 A. M. One cannot say, however, 6 A.M. is twice as late as 3 A.M. because "zero time" is an arbitrary origin. In the consumer price index, if the base year is 1983, the price level during 1983 will be set arbitrarily as 100. Although this is an equal interval measurement scale, the zero point is arbitrary.

- **Ratio Scale**

Ratio scales incorporate all the powers of the previous scales plus the provision for absolute zero or origin. Ratio data represent the actual amounts of variable. Measures of physical dimensions such as weight, height, distance, and area are the examples. The absolute zero represents a point on the scale where there is an absence of the given attribute. If we hear that a person has zero amount of money, we understand the zero value of the amount.

Lesson 18: CRITERIA FOR GOOD MEASUREMENT

Now that we have seen how to operationally define variables, it is important to make sure that the instrument that we develop to measure a particular concept is indeed accurately measuring the variable, and in fact, we are actually measuring the concept that we set out to measure. This ensures that in operationally defining perceptual and attitudinal variables, we have not overlooked some important dimensions and elements or included some irrelevant ones. The scales developed could often be imperfect and errors are prone to occur in the measurement of attitudinal variables. The use of better instruments will ensure more accuracy in results, which in turn, will enhance the scientific quality of the research. Hence, in some way, we need to assess the "goodness" of the measure developed.

What should be the characteristics of a good measurement? An intuitive answer to this question is that the tool should be an accurate indicator of what we are interested in measuring. In addition, it should be easy and efficient to use. There are three major criteria for evaluating a measurement tool: validity, reliability, and sensitivity.

Validity

Validity is the ability of an instrument (for example measuring an attitude) to measure what it is supposed to measure. That is, when we ask a set of questions (i.e. develop a measuring instrument) with the hope that we are tapping the concept, how can we be reasonably certain that we are indeed measuring the concept we set out to do and not something else? There is no quick answer.

Researchers have attempted to assess validity in different ways, including asking questions such as "Is there consensus among my colleagues that my attitude scale measures what it is supposed to measure?" and "Does my measure correlate with others' measures of the 'same' concept?" and "Does the behavior expected from my measure predict the actual observed behavior?" Researchers expect the answers to provide some evidence of a measure's validity.

What is relevant depends on the nature of the research problem and the researcher's judgment. One way to approach this question is to organize the answer according to measure-relevant types of validity. One widely accepted classification consists of three major types of validity: (1) content validity, (2) criterion-related validity, and (3) construct validity.

(1) Content Validity

How well it covers all the aspects, is it up to the level of measuring what it is supposed to measure?
The content validity of a measuring instrument (the composite of measurement scales) is the extent to which it provides adequate coverage of the investigative questions guiding the study. If the instrument contains a representative sample of the universe of subject matter of interest, then the content validity is good. To evaluate the content validity of an instrument, one must first agree on what dimensions and elements constitute adequate coverage. To put it differently, content validity is a function of how well the dimensions and elements of a concept have been delineated. Look at the concept of *feminism* which implies a person's commitment to a set of beliefs creating full equality between men and women in areas of the arts, intellectual pursuits, family, work, politics, and authority relations. Does this definition provide adequate coverage

of the different dimensions of the concept? Then we have the following two questions to measure *feminism*:

1. Should men and women get equal pay for equal work?
2. Should men and women share household tasks?

These two questions do not provide coverage to all the dimensions delineated earlier. It definitely falls short of adequate content validity for measuring *feminism.*

A panel of persons to judge how well the instrument meets the standard can attest to the content validity of the instrument. A panel independently assesses the test items for a performance test. It judges each item to be essential, useful but not essential, or not necessary in assessing performance of a relevant behavior.

Face validity is considered as a basic and very minimum index of content validity. Face validity indicates that the items that are intended to measure a concept, do on the face of it, look like they measure the concept. For example a few people would accept a measure of college student math ability using a question that asked students: 2 + 2 = ? This is not a valid measure of college-level math ability on the face of it. Nevertheless, it is a subjective agreement among professionals that a scale logically appears to reflect accurately what it is supposed to measure. When it appears evident to experts that the measure provides adequate coverage of the concept, a measure has face validity.

(2) Criterion-Related Validity

Criterion validity uses some standard or criterion to indicate a construct accurately. The validity of an indicator is verified by comparing it with another measure of the same construct in which research has confidence. There are two subtypes of this kind of validity.

Concurrent validity:
To have concurrent validity, an indicator must be associated with a preexisting indicator that is judged to be valid. For example we create a new test to measure intelligence. For it to be concurrently valid, it should be highly associated with existing IQ tests (assuming the same definition of intelligence is used). It means that most people who score high on the old measure should also score high on the new one, and vice versa. The two measures may not be perfectly associated, but if they measure the same or a similar construct, it is logical for them to yield similar results.

Predictive validity:
Criterion validity whereby an indicator predicts future events that are logically related to a construct is called a predictive validity. It cannot be used for all measures. The measure and the action predicted must be distinct from but indicate the same construct. Predictive measurement validity should not be confused with prediction in hypothesis testing, where one variable predicts a different variable in future. Look at the scholastic assessment tests being given to candidates seeking admission in different subjects. These are supposed to measure the scholastic aptitude of the candidates – the ability to perform in institution as well as in the subject. If this test has high predictive validity, then candidates who get high test score will subsequently do well in their subjects. If students with high scores perform the same as students with average or low score, then the test has low predictive validity.

(3) Construct Validity

Construct validity is for measures with multiple indicators. It addresses the question: If the measure is valid, do the various indicators operate in consistent manner? It requires a definition with clearly specified conceptual boundaries. In order to evaluate construct validity, we consider both theory and the measuring instrument being used. This is assessed through convergent validity and discriminant validity.

Convergent Validity: This kind of validity applies when multiple indicators converge or are associated with one another. Convergent validity means that multiple measures of the same construct hang together or operate in similar ways. For example, we construct "education" by asking people how much education they have completed, looking at their institutional records, and asking people to complete a test of school level knowledge. If the measures do not converge (i.e. people who claim to have college degree but have no record of attending college, or those with college degree perform no better than high school dropouts on the test), then our test has weak convergent validity and we should not combine all three indicators into one measure.

Discriminant Validity: Also called divergent validity, discriminant validity is the opposite of convergent validity. It means that the indicators of one construct hang together or converge, but also diverge or are negatively associated with opposing constructs. It says that if two constructs A and B are very different, then measures of A and B should not be associated. For example, we have 10 items that measure political conservatism. People answer all 10 in similar ways. But we have also put 5 questions in the same questionnaire that measure political liberalism. Our measure of conservatism has discriminant validity if the 10 conservatism items hang together and are negatively associated with 5 liberalism ones.

Reliability

The reliability of a measure indicates the extent to which it is without bias (error free) and hence ensures consistent measurement across time and across the various items in the instrument. In other words, the reliability of a measure is an indication of the *stability* and *consistency* with which the instrument measures the concept and helps to assess the 'goodness" of measure.

Stability of Measures

The ability of the measure to remain the same over time – despite uncontrollable testing conditions or the state of the respondents themselves – is indicative of its stability and low vulnerability to changes in the situation. This attests to its "goodness" because the concept is stably measured, no matter when it is done. Two tests of stability are test-retest reliability and parallel-form reliability.

(1) Test-retest Reliability

Test-retest method of determining reliability involves administering the same scale to the same respondents at two separate times to test for stability. If the measure is stable over time, the test, administered under the same conditions each time, should obtain similar results. For example, suppose a researcher measures job satisfaction and finds that 64 percent of the population is satisfied with their jobs. If the study is repeated a few weeks later under similar conditions, and the researcher again finds that 64 percent of the population is satisfied with their jobs, it appears that the measure has repeatability. The high stability correlation or

consistency between the two measures at time 1 and at time 2 indicates high degree of reliability. This was at the aggregate level; the same exercise can be applied at the individual level. When the measuring instrument produces unpredictable results from one testing to the next, the results are said to be unreliable because of error in measurement.

There are two problems with measures of test-retest reliability that are common to all longitudinal studies. Firstly, the first measure may sensitize the respondents to their participation in a research project and subsequently influence the results of the second measure. Further if the time between the measures is long, there may be attitude change or other maturation of the subjects. Thus it is possible for a reliable measure to indicate low or moderate correlation between the first and the second administration, but this low correlation may be due an attitude change over time rather than to lack of reliability.

(2) Parallel-Form Reliability:

When responses on two comparable sets of measures tapping the same construct are highly correlated, we have parallel-form reliability. It is also called equivalent-form reliability. Both forms have similar items and same response format, the only changes being the wording and the order or sequence of the questions. What we try to establish here is the error variability resulting from wording and ordering of the questions. If two such comparable forms are highly correlated, we may be fairly certain that the measures are reasonably reliable, with minimal error variance caused by wording, ordering, or other factors.

Internal Consistency of Measures

Internal consistency of measures is indicative of the homogeneity of the items in the measure that tap the construct. In other words, the items should 'hang together as a set,' and be capable of independently measuring the same concept so that the respondents attach the same overall meaning to each of the items. This can be seen by examining if the items and the subsets of items in the measuring instrument are highly correlated. Consistency can be examined through the inter-item consistency reliability and split-half reliability.

(1) Inter-item Consistency reliability:

This is a test of consistency of respondents' answers to all the items in a measure. To the degree that items are independent measures of the same concept, they will be correlated with one another.

(2) Split-Half reliability:

Split half reliability reflects the correlations between two halves of an instrument. The estimates could vary depending on how the items in the measure are split into two halves. The technique of splitting halves is the most basic method for checking internal consistency when measures contain a large number of items. In the split-half method the researcher may take the results obtained from one half of the scale items **(**e.g. odd-numbered items) and check them against the results from the other half of the items (e.g. even numbered items). The high correlation tells us there is similarity (or homogeneity) among its items.

It is important to note that reliability is a necessary but not sufficient condition of the test of goodness of a measure. For example, one could reliably measure a concept establishing high stability and consistency, but it may not be the concept that one had set out to measure. Validity ensures the ability of a scale to measure the intended concept.

Sensitivity

The sensitivity of a scale is an important measurement concept, particularly when changes in attitudes or other hypothetical constructs are under investigation. Sensitivity refers to an instrument's ability to accurately measure variability in stimuli or responses. A dichotomous response category, such as "agree or disagree," does not allow the recording of subtle attitude changes. A more sensitive measure, with numerous items on the scale, may be needed. For example adding "strongly agree," "mildly agree," "neither agree nor disagree," "mildly disagree," and "strongly disagree" as categories increases a scale's sensitivity.

The sensitivity of a scale based on a single question or single item can also be increased by adding additional questions or items. In other words, because index measures allow for greater range of possible scores, they are more sensitive than single item.

Practicality*:*

The scientific requirements of a project call for the measurement process to be reliable and valid, while the operational requirements call for it to be practical. Practicality has been defined as *economy*, *convenience*, and *interpretability.*

Lesson 19: RESEARCH DESIGN

A research design is a master plan specifying the methods and procedures for collecting and analyzing the data. It is a strategy or blueprint that plans the action for carrying through the research project data.

A research design involves a series of rational decision-making choices depending upon the various options available to the researchers. Broadly it is composed of different elements like: the purpose of the study, the unit of analysis, time dimension, mode of observation, sampling design, observation tools, data processing, and data analysis. Let us look at each one of these elements.

1. Purpose of the Study

From the perspective of purpose of the study, a research can be exploratory, descriptive, and explanatory (the distinctions we have already discussed). As we have already covered a number of steps in the research process, at this stage it is assumed that we are pretty sure about what we are looking for whereby we have gone much beyond the stage of an exploratory study (all studies have elements of exploration in them).

Beyond the exploratory stage now we are entering into the formal stage of delineating the plan for data collection, data processing, and data analysis. Here our focus is on whether our study is going to be a *descriptive* or *explanatory*. The essential difference between descriptive and explanatory studies lies in their objectives. If the research is concerned with finding out *who, what, where, when, or how much*, then the study is **descriptive.** If it is concerned with learning why – that is how one variable produces changes in another – it is causal. Research on crime as such is descriptive when it measures the types of crimes committed, how often, when, where, and by whom. In an **explanatory study**, we try to explain relationships among variables – for instance, why the crime rate is higher in locality A than in locality B. Every explanatory study in the beginning is likely to be descriptive as well.

Methodological rigor increases as one moves from exploratory study to explanatory study, which may encompass hypothesis testing involving multiple methods of data collection, sophistications in sampling designs, formulation of instruments of data collection, data processing, and data analysis. Since the purpose of the study is likely to determine how rigorous the research design is likely to be, therefore, the researcher would decide very early on about the purpose of his/her study.

Within the explanatory study, researcher may further decide about the type of investigation i.e. causal versus correlational. The researcher must decide whether a causal or correlational study is needed to find an answer to the issue at hand. The former is done when it is necessary to establish a definitive cause-and-effect relationship. If the researcher just wants a mere identification of important factors "associated with" the problem, then a correlational study is called for. Whether the study is basically a correlational or causal will help in deciding about the mode of observation – survey study or an experimental study.

2. Unit of Analysis

The unit of analysis refers to the level of aggregation of the data collected during the subsequent data analysis stage. If, for instance, the problem statement focuses on how to raise the motivational levels of employees in general, then we are interested in individual employees in the organization and would have to find out what we can do to raise their motivation. Here the unit of analysis is the **individual**. We will be looking at the data gathered from each individual and treating each employee's response as an individual data source.

If the researcher is interested in studying two-person interactions, then several two-person groups (also known as dyads) will become the unit of analysis. Analysis of husband-wife interactions in families and supervisor-subordinate relationship at the work place, teacher-student relationship in the educational institution are good examples of dyads as unit of analysis.

If the problem statement is related to group effectiveness, the unit of analysis would be at group level. In other words, even though we may gather relevant data from all individuals comprising, say six groups, we would aggregate the individual data into group data so as to see the differences among six **groups.** If we compare different departments in the organization, then data analysis will be done at the department level – that is, the individuals in the department will be treated as one unit – and comparisons made treating the department as a unit of analysis.

The research question determines the unit of analysis. Keeping the research question in view, it is necessary to decide on the unit of analysis since the data collection methods, sample size, and even the variables included in the framework may sometimes be determined or guided by the level at which the data are aggregated for analysis.

Units of analysis in a study are typically also the *units of observation*. Thus, to study voting intentions, we would interview (observe) individual voters. Sometimes, however, we "observe" our units of analysis indirectly. For example, we might ask husbands and wives their individual voting intentions, for purpose of distinguishing couples who agree and disagree politically. We might want to find out whether political disagreements tend to cause family disharmony, perhaps. In this case, our unit of analysis would be families, though the *unit of observation* would be the individual wives and husbands.

3. Time Dimension

Do we make the observations more or less at one time or over a long period, former called as cross-sectional studies and the latter as longitudinal studies. While planning the strategy for data collection the time dimension may be an important component.

Cross-Sectional Studies are carried out **o**nce and represent a snapshot of one point in time. Data are collected just once, perhaps over a period of days or weeks or months, in order to answer the research question.

Longitudinal Studies are repeated over an extended period. F The advantage of longitudinal studies is that it can track changes over time. For example, the researcher might want to study employees' behavior before and after a change in the top management, so as to know what effects the change accomplished. Here, because data are gathered at two different points in time, the study is not cross-sectional or of the one-shot kind, but is carried longitudinally across

a period of time. Such studies, as when data on the dependent variable are gathered at two or more points in time to answer the research question, are called longitudinal. Longitudinal studies can be *panel studies* and *cohort studies* which were discussed earlier.

4. Researcher Control of Variables

In terms of researcher's ability to manipulate variables, we can differentiate between experimental and ex post facto design. In an **experiment**, the researcher attempts to control and/or manipulate the variables in the study. It is enough that we can cause variables to be changed or held constant in keeping with our research objectives. Experimental design is appropriate when one wishes to discover whether certain variables produce effects in other variables. Experimentation provides the most powerful support possible for hypothesis of causation.

Experimental studies can be contrived and non-contrived. Research can be done in the natural environment where work proceeds normally (i.e. in non-contrived setting) or in artificial, contrived setting. Correlational studies are invariably conducted in non-contrived settings, whereas most rigorous causal studies are done in contrived lab settings. Correlational studies in organizations are called field studies. Studies conducted to establish cause-and-effect relationship using the same natural environment are called **field experiments.** Here the researcher does not interfere with the natural occurrence of events in as much as independent variable is manipulated.

Experiments done to establish cause and effect relationship beyond the possibility of the least doubt require the creation of an artificial, contrived environment in which all the extraneous factor are strictly controlled. Similar subjects are chosen carefully to respond to certain manipulated stimuli. These studies are referred to as **lab experiments**.

With an **ex post facto** design, investigators have no control over the variables in the sense of being able to manipulate them. They can only report what has happened or what is happening. It is important that the researchers using this design do not influence the variables; to do so, introduce bias. The researcher is limited to holding factors constant by judicious selection of subjects according to strict sampling procedures and by statistical manipulation of findings. Survey research is an example of such study.

5. Choice of Research Design: Mode of Observation

There could be number of ways to collect the data depending upon whether the study is quantitative or qualitative, descriptive or explanatory, cross-sectional or longitudinal, and contrived or non-contrived, the researcher decides about the mode of observation. The modes could be like: survey, experiment, communication analysis (content analysis) field observation, case study, focus group discussion.

6. Sampling Design

The basic idea of sampling is that by selecting some of the elements in population, we may draw conclusions about the entire population. A population element is the subject on which the measurement is being taken. It is the unit of analysis. Sampling has its own advantages and

disadvantages. Depending upon the nature of the study the researchers decides about following appropriate type of sampling design.

7. Observation Tools

Observation tool mostly used by social researchers are: questionnaire, interview schedule, Interview guide, and check list. In the research design, the researcher will specify the tools of data collection along the logic justifying the appropriateness of the selected tool.

8. Field Data Collection

Depending upon the mode of observation, the researcher will outline the procedure for field operations. The researcher will try to look after the questions like: How the data will be collected? Who will be responsible for the collections of data? What training will be imparted to the field functionaries? How will the quality control of data be maintained?

9. Data Processing and Data Analysis

In the research design the researcher is required to tell how the data shall be processed (manually, mechanically), and analysis plans explicated. In case the qualitative data are to be quantifies the procedures should be spelled out. The procedures for the construction of score Indexes, if any, should be explained.

The research design should also say something about the analysis plan, the use of statistics, and the inferences to be drawn.

Survey Research: An Overview

Surveys require asking people, who are called **respondents**, for information, using either verbal or written questions. Questionnaires or interviews are utilized to collect data on the telephone, face-to-face, and through other communication media. The more formal term **sample survey** emphasizes that the purpose of contacting respondents is to obtain a representative sample of the target population. Thus, a **survey** is defined as a method of gathering **primary data** based on communication with a representative sample of individuals.

Steps in Conducting a Survey

The survey researcher follows a deductive approach. He or she begins with a theoretical or applied research problem and ends with empirical measurement and data analysis. Once a researcher decides that survey is an appropriate method, basic steps in a research project can broadly be divided into six sub-steps.

1. **Develop the hypothesis; decide on type of survey (mail, interview, telephone); write survey questions (decide on response categories, design lay out)**. The researcher develops an instrument – a survey questionnaire or interview schedule – that he or she uses to measure variables. Respondents read the questions themselves and mark answers on a *questionnaire*. An *interview schedule* is a set of questions read to the respondent by an interviewer, who also records the responses. To simplify the discussion, we will use only the term *questionnaire.*

2. **Plan how to record data; pilot test survey instrument.** When preparing the questionnaire, the researcher thinks ahead to how he or she will record and organize data for analysis. The questionnaire is pilot tested on a small set of respondents similar to those in the final survey.

3. **Decide on target population; get sampling frame; decide on sample size; select the sample.**

4. **Locate respondents; conduct interviews; carefully record data.** The researcher locates sampled respondents in person, by telephone, or by mail. Respondents are given information and instructions on completing the questionnaire or interview.

5. **Enter data into computers; recheck all data; perform statistical analysis on data.**

6. **Describe methods and findings in research report; present findings to others for critique and evaluation.**

Lesson 20: SURVEY RESEARCH

Research Design can be classified by the *approach* used to gather primary data. There are really two alternatives. We can *observe* conditions, behavior, events, people, or processes. Or we can *communicate* with people about various topics, including participants' attitudes, motivations, intentions, and expectations.

The **communication approach** involves surveying people and recording their responses for analysis. The great strength of the survey as a primary data collecting approach is its versatility. What media do we use for communicating with people? The traditional face to face communication (interview) for conducting surveys is still in vogue. Nevertheless, the digital technology is having a profound impact on the society as well as on research. Its greatest impact is on the creation of new forms of communication media.

Human Interactive Media and Electronic Interactive Media

When two people engage in conversation, human interaction takes place. **Human interactive media** are personal forms of communication. One human being directs a message to and interacts with another individual (or a small group). When they think of interviewing, most people envision this type of face-to-face dialogue or a conversation on telephone.

Electronic interactive media allows researchers to reach a large audience, to personalize individual messages, and to interact with members of the audience using digital technology. To a large extent electronic interactive media users are controlled by the users themselves. In the context of surveys, respondents are not passive audience members. They are actively involved in a two-way communication when electronic interactive media are utilized.

The Internet, the medium that is radically altering many organizations' research strategies, provides a prominent example of the new electronic interactive media.

Non-Interactive Media

The traditional questionnaire received by mail and completed by the respondent does not allow a dialogue or exchange of information for immediate feedback. Self-administered questionnaires printed on paper are also non-interactive.

CHOOSING A COMMUNICATION MEDIA

Once the researcher has determined that surveying is the appropriate data collection approach, various means may be used to secure information from individual. A research can conduct a survey by personal interview, telephone, mail, computer, or a combination of these media.

Personal Interviewing

A personal interview (i.e. face to face communication) is a two way conversation initiated by an interviewer to obtain information from a respondent. The differences in the roles of the interviewer and the respondent are pronounced. They are typically strangers, and the interviewer generally controls the topics and patterns of discussion. The consequences of the event are usually insignificant for the respondent. The respondent is asked to provide

information and has little hope of receiving any immediate or direct benefit from this cooperation.

Personal interviews may take place in a factory, in a homeowner's doorway, in an executive's office, in a shopping mall, or in other settings.
Advantages of Personal Interviewing:

The face-to-face interaction between interviewer and respondent has several characteristics that help researchers obtain complete and precise information. Personal interviews offer many advantages.

1. The Opportunity for Feedback

Personal interviews allow for feedback. For example, an employee who is reluctant to provide sensitive information about his workplace may be reassured by the interviewer that his answers will be strictly confidential. The interviewer may also provide feedback in clarifying any questions an employee or any other respondent has about the instructions or questions. Circumstances may dictate that at the conclusion of the interview, the respondent be given additional information concerning the purpose of the study (part of debriefing). This is easily accomplished in personal interview.

2. Probing Complex Questions

An important characteristic of personal interview is the opportunity to follow up, by probing. If a respondent's answer is brief or unclear, the researcher may ask for a clearer or more comprehensive explanation. Probing implies the verbal prompts made by the interviewer when the respondent must be motivated to communicate his or her answer more fully. Probing encourages respondents to enlarge on, clarify, or explain answers. Probing becomes all the more important when the questions don't have structured response categories. The complex question that cannot easily be asked in telephone or mail surveys can be handled by skillful interviewers.

3. Length of Interview

If the research objective requires an extremely lengthy questionnaire, personal interviews may be the only alternative. Generally, telephone interviews last fewer than 10 minutes, whereas a personal interview can be much longer, perhaps more than an hour. A rule of thumb for mail questionnaire is that it should not be more than six pages.

4. High Completion Rate

The social interaction between a well-trained interviewer and a respondent in personal interview increases the likelihood that the respondent will answer all items on the questionnaire. The respondent who grows bored with a telephone interview may terminate the interview at his or her discretion simply by hanging up the phone. A respondent's self-administration of a mail questionnaire requires more effort. Rather than writing a long explanation, the respondent may fail to complete some of the questions on the self-administered questionnaire. This will be an **item non-response** – that is, failure to provide an answer to a question. It is less likely to happen with an experienced interviewer and in a face to face situation.

5. Props and Visual Aids

Interviewing respondents face to face allows an investigator to show them a new product sample, a sketch of proposed office, or some other visual aid. The respondents can even taste samples of different products and can give their evaluations. Such an evaluation cannot be done in telephone interview or mail survey.

6. High Participation Rate

While some people are reluctant to participate in a survey, the presence of an interviewer generally increases the percentages of people willing to complete the interview. Respondents are not required to do any reading or writing – all they have to do is to talk. Most people enjoy sharing information and insights with friendly and sympathetic interviewers. Certainly, in personal interviews there is a higher rate of participation rate of the respondents compared with mail surveys and telephone interviews.

7. Observation of the Non-Verbal Behavior

In a personal interview, the interviewer can catch the facial expressions, body movements, and, depending upon the goals of the study, the environment of the respondent. Such observations may supplement the verbal information.

8. Non-Literates can participate in Study

Since the respondent has neither to read nor to write, therefore, an illiterate or a functionally illiterate person can also take part in the survey study.

9. Interviewer can Prescreen Respondent

In order to ensure that the respondent fits the sampling criteria, the interviewer can do some prescreening of the respondent. In personal interview the interviewer makes it sure that only the relevant respondent provides the information. In case of mail survey we are not sure who actually filled out the questionnaire, but in personal interview, the interview may be able to have some control over the environment of the information providers. In case there are other people around, he may make an excuse from other because he is interested in the true opinion of the sampled person.

10. CAPI – Computer Assisted Personal Interviewing

With the use of such modern technology the responses of the respondents can be entered into a portable microcomputer to reduce error and cost.

Disadvantages of Personal Interviewing:

1. **High Cost**

Personal interviews are generally more expensive than mail, internet, and telephone surveys. The geographic proximity of respondents, the length of the questionnaire, and the number of people who are non-respondents because they could not be contacted all influence the cost of

the personal interviews. The training of the field interviewers, supervision, and other logistical support cost may add up the total cost of the study. People usually estimate the cost of personal interviews is usually 15 times higher than the mail survey

2. Scarcity of Highly Trained Interviewers

In case of a big study (especially a sponsored study) there shall be a need of highly trained interviewers, who are not easily available. Using unqualified and untrained interviewers are likely to have a negative effect on the quality of the data and the subsequent generalizations.

3. Lack of Anonymity of Respondent

Because the respondent in a personal interview is not anonymous therefore he/she may be reluctant to provide confidential information to another person. Though the interviewer provides all the assurance for the confidentiality of the information (by not asking the name or address) but the mere fact the respondent has been located, therefore he/she may not trust.

4. Callbacks – a Labor Intensive Work

When the person selected to be in the sample cannot be contacted on the first visit, a systematic procedure is normally initiated to call back at another time. **Callbacks** or attempts to re-contact individuals selected for the sample are the major means to reducing non-response error. It is a labor intensive work and definitely increases the cost.

5. Interviewer Influence

There is some evidence that the demographic characteristics of the interviewer influence respondents' answers. Respondent's sex, age, and physical appearance can have an effect on the responses of the respondent.

6. Interviewer Bias

Interviewer's personal likings and dis-likings, the environment, and cultural biases can affect the understanding of the responses, its recording, and its interpretation.

7. No Opportunity to Consult

The interview may take place anywhere – place of work, in the shopping mall, at home – the respondent may be unable to consult record, in case he/she has to do so for any specific question.

8. Less Standardized Wording

Despite the fact that the questions have been printed and have a specified order, these questions are read by the interviewer. The interviewers intentionally or unintentionally may not be able to use the standardized wording which may bias the data. Similarly the order of the questions may be altered.

9. Limitations in Respondents' Availability and Accessibility

Some executive officers or VIPs may not be available or accessible to interviewers. Some of them may not be willing to talk to strangers for security reasons.

10. Some Neighborhoods are Difficult to Visit

Just for security reasons some neighborhoods may not allow outsiders to enter the premises. Even the formal permission may be denied because the residents don't want to contact any strangers.

Door to Door Interviews

These are the personal interviews conducted at respondent's home or place of work. It is likely to provide more representative sample of the population than mail questionnaire. Some people may prefer to give a verbal response rather than in writing. People who do not have telephones, who have unlisted numbers, or who are otherwise difficult to contact may be reached through door to door interviews.

Door to door interview may exclude individuals living in multiple dwelling units with security systems, such as high rise apartment dwellers, or executives who are too busy to grant a personal interview during business hours.

People, who are at home and willing to participate, especially if interviews are conducted in the day time, are somewhat more likely to be stay-at-home "moms" or retired people. These and other variables related to respondents' tendencies to stay at home may affect participation.

Intercept Interviews in Malls and Other High-Traffic Areas

Personal interviews conducted in shopping malls are referred to as mall intercept interviews. Interviewers generally stop and attempt to question shoppers at a central point within the mall or at the entrance. These are low cost. No travel is required to the respondent's home – instead the respondent comes to the interviewer, and thus many interviews can be conducted quickly. The incidence of refusal is high, however, because individuals may be in a hurry.

In mall intercept interviews the researcher must recognize that he or she should not be looking for representative sample of the total population. Each mall will have its own customer characteristics of customers.

Personal interviews in the shopping mall may be appropriate when demographic factors are not likely to influence the survey's findings or when target group is a special population segment, such as the parents of children of bike-riding age.

Lesson 21: INTERCEPT INTERVIEWS IN MALLS AND OTHER HIGH-TRAFFIC AREAS

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Telephone Interviewing

Telephone interviewing has been a mainstay of commercial survey research. The quality of data obtained by telephone may be comparable to that collected in personal interviews. Respondents may even be more willing to provide detailed and reliable information on a variety of personal topics over the telephone than in personal interviews. Telephone surveys can provide representative samples of general population in most industrialized countries.

Central Location Interviewing

Research agencies and interviewing services typically conduct all telephone interviews from central location. WATS (Wide-Area Telecommunications Service) lines, provided by long distance telephone service at fixed rates, allow interviewers to make unlimited telephone calls throughout the entire country or within a specific geographic area. Such central location interviewing allows firms to hire staffs of professional interviewers and to supervise and control the quality of interviewing more effectively. When telephone interviews are centralized and computerized, the research becomes even more cost-effective.

Computer-Assisted Telephone Interviewing (CATI)

Advances in computer technology allow responses to telephone interviews to be entered directly into a computer in a process known as **computer assisted telephone interviewing (CATI).**Telephone interviewers are seated at computer terminals. A monitor displays the questionnaire, one question at a time, along with pre-coded possible responses to each question. The interviewer reads each question as it is shown on the screen. When the respondent answers, the interviewer enters the response into the computer, and it is automatically stored in the computer's memory when the computer displays the next question on the screen. A computer assisted telephone interviewing requires that answers to the questions be highly structured. A lot of computer programming facilitates telephone interviewing.

The Strengths of Telephone Interviewing:

1. High Speed

The speed of data collection is a major advantage of telephone interviewing. For example, union officials who wish to survey members' attitudes toward a strike may conduct a telephone survey during the last few days of the bargaining process. Whereas data collection with mail or personal interviews can take several weeks, hundreds of interviews can be conducted literally overnight. When the interviewer enters the respondents' answers directly into a computerized system, data processing can be done even faster.

2. Saves Cost

As the cost of personal interviews continues to increase, telephone interviews are becoming relatively inexpensive. It is estimated the cost of telephone interviewing is less than 25% of the door to door personal interviews.

3. Callbacks

An unanswered call, a busy signal, or a respondent who is not at home requires a callback. Telephone callbacks are substantially easier and less expensive than personal interview callbacks.

4. Can Use Computerized Random Digit Dialing

Use of

5. Expanded Geographic Area Coverage without Increasing the Cost

6. Uses fewer but highly Skilled Interviewers

7. Reduced Interviewer Bias

8. Better Access to hard-to-reach respondents through repeated callbacks

In some neighborhoods, people are reluctant to allow stranger to come inside their house, or even stop on the doorstep. The same people, however, may be preferably willing to cooperate with a telephone survey request. Likewise, interviewers may be somewhat reluctant to conduct face-to-face interviews in certain neighborhoods, especially during the evening hours. Telephone interviewing avoids these problems.

9. Use Computer Assisted Telephone Interviewing (CATI)

Responses can be directly entered into computer file to reduce error and cost.

Weaknesses of Telephone Interviewing

1. Absence of Face-to-Face Contact

Telephone interviews are more impersonal than face-to-face interviews. Respondents may answer embarrassing or confidential questions more willingly in a telephone interview than in a

personal interview. People may be more comfortable to answer sensitive and threatening questions through mail surveys.

Absence of face-to-face contact can be a liability. The interviewer and the respondent don't see each other what they are doing (Responding still responding when he/she is thinking and not speaking. Has the interviewer finished recording the information)?

2. Response Rate is lower than for Personal Interviews

Some individuals refuse to participate in telephone interviews. Telephone researchers can run into several roadblocks when trying to obtain executives' cooperation at work. Participants find it easier to terminate a phone interview.

3. Lack of Visual Medium

Since visual aids cannot be utilized in telephone interview, research that requires visual material cannot be conducted by phone.

4. Limited Duration

Length of the interview is limited. Respondents who feel they have spent too much time in the interview will simply hang up. (a good rule of thumb is to plan telephone interviews to be approximately 10 minutes long).

5. Many Numbers are unlisted or not working

6. Less Participant Involvement
Telephone surveys can result in less thorough responses, and those interviewed by phone find the experience to be less rewarding than a personal interview. Participants report less rapport with telephone interviewers than with personal interviewers.

7. Distracting Physical Environment

Multiple phones distract the interview situation which may affect the quality of the data.

Self-Administered Questionnaires

The self-administered questionnaire has become ubiquitous in modern living. Service evaluations of hotels, restaurants, car dealerships, and transportation providers furnish ready examples. Often a short questionnaire is left to be completed by the participants in a convenient location or is packed with the product. Self-administered mail questionnaires are delivered not only through postal services, but also via fax and courier service. Other modalities include computer-delivered and intercept studies.

Mail Questionnaire

A mail survey is a self-administered questionnaire sent to respondents through the mail. This paper-and-pencil method has several advantages and disadvantages.

Advantages of Mail Questionnaire

1. Geographic Flexibility

Mail questionnaires can reach a geographically dispersed sample simultaneously and at a relatively low cost because interviewers are not required. Respondents in isolated areas or those who are otherwise difficult to reach (executives) can be contacted more easily by mail.

2. Sample Accessibility

Researchers can contact participants who may otherwise be inaccessible. Some people, such as major corporate executives and physicians, are difficult to reach in person or by phone, as gatekeepers limit access. But the researchers can often access these special participants by mail or computer.

3. Self-Administered Questionnaires save Time

Self-administered questionnaires can be widely distributed to a large number of employees, so organizational problems may be assessed quickly and inexpensively. Questionnaires may be administered during group meetings as well as in the class rooms. The researcher can establish rapport with the respondents, can stay there for any clarifications, and may also be for any debriefing.

4. Saves Cost

Mail questionnaires are relatively inexpensive compared to personal interviews and telephone surveys. However, these may not be so cheap. Most include a follow-up mailing, which requires additional postage and printing of additional questionnaires.

5. Respondent Convenience

Mail surveys and self-administered questionnaires can be filled out whenever the respondent has time. Thus there is a better chance that respondents will take time to think about their response. Many hard-to-reach respondents place high value on responding to surveys at their own convenience and are best contacted by mail. In some situations, particularly in organizational research, mail questionnaires allow respondents time to collect facts (such as records of absenteeism) that they may not be able to recall without checking. In the case of household surveys, the respondents may provide more valid and factual information by checking with family members compared with if they are giving a personal interview.

6. Anonymity

Mail surveys are typically perceived as more impersonal, providing more anonymity than the other communication modes, including other methods for distributing self-administered questionnaires. Absence of interviewer can induce respondents to reveal sensitive or socially undesirable information.

7. Standardized Questions

Mail questionnaires are highly standardized, and the questions are quite structured.

Disadvantages of Mail Questionnaire

1. Low Response Rate

Mail questionnaire has very low rate of return of the filled questionnaires.

2. Low Completion Rate

There are chances that respondents leave many questions as unanswered, either because they did not understand the question or they shied away.

3. Increases Cost

The researcher keeps on waiting for the return. When enough response is not there, then the reminders are sent, and again there is a waiting time. With the reminders copies of the questionnaires are sent. All this adds to the cost of the study.

4. Interviewer's Absence

Respondent may have different interpretations of the questions. Due to the absence of the interviewer, the respondents are unable to get any help for needed clarifications.

5. No Control on Question Order

In a self-administered/mail questionnaire, the respondent usually reads the whole of the questionnaire prior to answering the questions. The latter questions may influence the answers to the earlier questions; thereby it is likely to bias the data. In interview the questionnaire remains in the hands of the interviewer, and the respondent does not know what question is likely to follow. Therefore, in interview there is a control in the question order.

6. Cannot Use Lengthy Questionnaire

Mail questionnaires vary considerably in length, ranging from extremely short postcard questionnaires to lengthy, multi-page booklets requiring respondents to fill thousands of answers. Lengthy questionnaires are usually avoided by the respondents. A general rule of thumb is that it should not exceed six pages.

7. No Control over the Environment

The researcher does not know about who filled the questionnaire

8. Cannot Catch the Non-Verbal Behavior

9. Non-Literates cannot participate

For participation in the mail/self-administered questionnaire related studies, the respondents have to be educated up to a certain level. Hence the non-educated people are in a way excluded from the study.

Increasing Response Rate

Here are some guidelines for increasing the response rate. Response rate is the number of questionnaires returned or completed, divided by the total number of eligible people who were contacted or asked to participate in the survey.

Cover Letter

The cover letter that accompanies the questionnaire or is printed on the first page of the questionnaire is an important means of inducing a reader to complete and return the questionnaire. In the letter tell why the study is important, who is sponsoring the study, how was the respondent selected, assuring the anonymity of the respondent could help in establishing rapport and motivating the respondent to respond.

A personalized letter addressed to a specific individual shows the respondent that he or she is important. Including an individually typed letter on letterhead versus printed form is an important element in increasing the response rate in mail surveys.

Money Helps

The respondent's motivation for returning a questionnaire may be increased by offering monetary incentives or premiums. Although pens, lottery tickets, and variety of premiums have been used, monetary incentives appear to be the most effective and least biasing incentive. It attracts the attention and creates a sense of obligation. Money incentive works for all income categories.

Interesting Questions

The topic of the research and thus the point of the questions cannot be manipulated without changing the problem definition. However, certain interesting questions can be added to the questionnaire, perhaps in the beginning, to stimulate the respondents' interest and to induce cooperation.

Lesson 22: SELF ADMINISTERED QUESTIONNAIRES (CONTINUED)

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Follow-Ups

Follow-up implies the communication of the message to respondents through different means for the return of questionnaire. After responses from the first wave of mailing begin to trickle-in, most studies use follow-up reminder for getting the response. A follow-up may include a duplicate questionnaire or may merely be a reminder to return the original questionnaire. Multiple contacts almost always increase response rates. The more attempts made to reach people, the greater the chances of their responding.

Preliminary Notification

Advance notification, by either letter or telephone, that a questionnaire will be arriving has bee successful in increasing the response rates in some situations. Advance notices that go out close to the questionnaire mailing time produce better results than those sent too far in advance.

This technique presupposes a certain level of development of the country where such facilities are available. Even otherwise, it depends upon the nature of the study as well as the type of respondents selected for the study.

Survey Sponsorship

Sponsorship of the study makes a difference for motivating the respondents to return the questionnaires. It depends upon the goodwill of the sponsoring agency that can activate/deactivate the respondent to fill the questionnaire and return it. There is some evidence that "official" and "respected" sponsorship increases the response rate. Sponsorship by well-known and prestigious organizations, such as universities or government agencies, may significantly influence response rates.

Return Envelopes

The inclusion of a stamped, self-addressed envelope encourages response because it simplifies questionnaire return.

Postage

The existing evidence shows that expedited delivery is very effective in increasing response rate. First class or third class mail, stamped mail or metered mail may make a difference.

Personalization

Personalization of the mailing has no clear-cut advantage in terms of improved response rates. Neither personal inside addresses nor individually signed cover letters significantly increased response rates; personally typed cover letters proved to be somewhat effective.

Size, Reproduction, and Color

The size of the paper, the printing, and color may have some effect, though not significant, on the response rate. It is recommended to use the A-4 size paper and while sending it do not fold it. The attractive printing may be another factor influencing the return rate. If questionnaire has different parts, the use of different colors of paper may motivate the respondents to take interest in the study and return the questionnaire.

The manipulation of one or two techniques independently of all others may do little to stimulate response. May be the researcher has to make use of all the possible techniques simultaneously, so that the response rate could be increased. Such an effort is referred to as Total Design Effort (TDE).

E-Mail Surveys

Questionnaires can be distributed via e-mail. E-mail is relatively new method of communication, and many individuals cannot be reached this way. However, certain projects lend themselves to, such as internal surveys of employees or satisfaction surveys of retail buyers who regularly deal with an organization via e-mail.

The benefits of an e-mail include speed of distribution, lower distribution and processing cost, faster turnaround time, more flexibility, and less handling of paper questionnaires.

Many respondents may feel that they can be more candid in e-mail than in person or on telephone, for the same reason they are candid on other self-administered questionnaires.

In many organizations the employees know that their e-mails are not secure, that "eves-dropping" by a supervisor could occur. Further maintaining the respondent's anonymity is difficult, because a reply to an e-mail message typically includes the sender's address. Researchers designing e-mail surveys should assure respondents that their responses will be confidential.

Not all e-mail systems have the same capacity: some handle color and graphics well; others are limited to text. The extensive differences in the capabilities of respondents' computers and email software limit the types of questions and the layout of the questionnaire.

Internet Surveys

An internet survey is a self-administered questionnaire posted on a Web site. Respondents provide answers to questions displayed on screen by highlighting a phrase, clicking an icon, or keying in an answer. Like any other survey, Internet surveys have both advantages and disadvantages.

Advantages of Internet Surveys

Speed and Cost Effectiveness: Internet survey allow the marketers to reach a large audience (possible a global one), to personalize the individual messages, and to secure confidential answers quickly and cost effectively. The computer to computer self-administered questionnaires eliminate the cost of paper, postage, data entry, and other administrative costs. Once an Internet questionnaire has been developed, the incremental cost of reaching additional respondents is marginal. Hence samples can be larger than with interviews or other types of self-administered questionnaires.

Visual Appeal and Interactivity: Surveys conducted on Internet can be interactive. The researcher can use more sophisticated lines of questioning based on the respondents' prior answers. Many of this interactive survey utilize color, sound, and animation, which may help to increase the respondents' cooperation and willingness to spend more time answering questions. The Internet is an excellent medium for the presentation of visual materials, such as photographs or drawings of product prototypes, advertisements, and movie trailers.

Respondent Participation and Cooperation: Participation in some Internet surveys occurs because computer users intentionally navigate to a particular Web site where questions are displayed. In some instances individuals expect to encounter a survey at a Web site; in other cases it is totally unexpected.

Accurate Real-Time Data Capture: The computer to computer nature of Internet surveys means that each respondent's answers are entered directly into the researcher's computer as soon as the questionnaire is submitted. In addition, the questionnaire software may be programmed to reject improper data entry.

Real-time data capture allows for real-time data analysis. A researcher can review up-to-the –minute sample size counts and tabulation data from an Internet survey in real time.

Callbacks: When the sample for Internet survey is drawn from a consumer panel, it is easy to recontact those who have not yet completed the questionnaire. Computer software can also identify the passwords of those respondents who completed only a portion of the questionnaire and send those people customized messages.

Personalized and Flexible Questioning: There is no interviewer in Internet surveys but the respondent interacts directly with the software on a Web site. In other words the computer program asks questions in sequence determined by a respondent's previous answer. The questions appear on the computer screen, and answers are recorded by simply pressing a key clicking an icon, thus immediately entering the data into the computer's memory. This ability to sequence the question based on previous responses is a major advantage of computer-assisted surveys.

Respondent Anonymity: Respondents are more likely to provide sensitive information when they can remain anonymous. The anonymity of the Internet encourages respondents to provide honest answers to sensitive questions.

Most respondents do not feel threatening to enter information into the compute because of the absence of the interviewer. They may be assured that no human will ever see their individual responses.

Response Rate: Response rate can be increased by sending e-mail friendly reminders.

Disadvantages of Internet Surveys

All People cannot participate: Many people in the general public cannot access to Internet. And, all people with Internet access do not have the same level of technology. Many lack powerful computers or software that is compatible with advanced features programmed into many Internet questionnaires. Some individuals have minimum computer skills. They may not know how to navigate through and provide answers to an Internet questionnaire.

No Physical Incentive: Unlike mail surveys, internet surveys do not offer the opportunity to send a physical incentive to the respondent.

SELECTING THE APPROPRIATE SURVEY RESEARCH DESIGN

The choice of communication method is not as complicated as it might appear. By comparing the research objectives with the strengths and weaknesses of each method, the researcher will be able to choose one that is suited to the needs. Nevertheless, there no "best" form of survey. Each has advantages and disadvantages. A researcher who must ask highly confidential questions ay conduct a mail survey, thus trading off the speed of data collection to avoid any possibility of interviewer bias.

To determine the appropriate technique, the researcher must ask questions such as "Is the assistance of an interviewer necessary? Are respondents likely to be interested in the issues

being investigating? Will cooperation be easily attained? How quickly the information is needed? Will the study require a ling complex questionnaire? How large is the budget?" The criteria – cost, speed, anonymity, and the like – may be different for each project.

If none of the choices turns out to be a particularly good fit, it is possible to combine the best characteristics of two or more alternatives into a *mixed mode.* Although this decision will incur the costs of the combined modes, the flexibility of tailoring a method to the unique need of the project is often an acceptable trade off.

Lesson 23: TOOLS FOR DATA COLLECTION

Broadly there are tools of data collection as part of communication surveys. These are:

Interview schedule
Questionnaire
Interview Guide

As discussed earlier interview schedule and questionnaires both are predesigned list of questions used for communication with the respondents. In the case of *interview schedule,* the list of questions remains in the hands of the interviewer who asks questions from the respondent, gets his/her response, and records the responses. *Questionnaire* is also a list of questions, which is handed over to the respondent, who reads the questions and records the answers himself. For purposes of convenience *questionnaire* will refer to both interview schedule as well as questionnaire.

Interview guide is list of topics that are to be covered during the course of interview. Interview guide is used for purposes of an in-depth interviewing. Questions on the topics are formulated on the spot. Most of the questions are open ended. The interviewer may not use the same wording for each respondent; the number of questions may be different; the sequence of questions may also be different.

Guidelines for Questionnaire Design

A survey is only as good as the questions it asks. Questionnaire design is one of the most critical stages in the survey research process. While common sense and good grammar are important in question writing, more is required in the art of questionnaire design. To assume that people will understand the questions is common error. People may not simply know what is being asked. They may be unaware of topic of interest, they may confuse the subject with something else, or the question may not mean the same thing to every respondent. Respondents may simply refuse to answer personal questions. Further, properly wording the questionnaire is crucial, as some problems may be minimized or avoided altogether if a skilled researcher composes the questions.

A good questionnaire forms an integrated whole. The researcher weaves questions together so they flow smoothly. He or she includes introductory remarks and instructions for clarification and measures each variable with one or more survey questions.

What should be asked?

The problem definition will indicate which type of information must be collected to answer the research question; different types of questions may be better at obtaining certain type of information than others.

1. Questionnaire Relevancy

A questionnaire is relevant if no unnecessary information is collected and if the information that is needed to solve the problem is obtained.

Asking the wrong or an irrelevant question is a pitfall to be avoided. If the task is to pinpoint compensation problems, for example, questions asking for general information about morale may be inappropriate. To ensure information relevancy, the researcher must be specific about data needs, and there should be a rationale for each item of information.

2. Questionnaire Accuracy

Once the researcher has decided what should be asked, the criterion of accuracy becomes of primary concern. Accuracy means that the information is reliable and valid. While experienced researchers believe that one should use simple, understandable, unbiased, unambiguous, and nonirritating words. Obtaining accurate answer from respondents is strongly influenced by the researcher's ability to design a questionnaire that facilitates recall and that will motivate the respondent to cooperate. Therefore avoid jargon, slang, and abbreviations. The respondents may not understand some basic terminology. Respondents can probably tell the interviewer whether they are married, single, divorced, separated, or widowed, but providing their "marital status" may present a problem. Therefore, asking somebody about his/her *marital status* while the person may not understand the meaning of marital status is likely to mess up the information. Words used in the questionnaire should be readily understandable to all respondents.

3. Avoid Ambiguity, Confusion, and Vagueness.

Ambiguity and vagueness plague most question writers. A researcher might make implicit assumptions without thinking of respondents' perspectives. For example, the question, "what is your income?" could mean weekly, monthly, or annual: family or personal; before taxes or after taxes; for this year or last year; from salary or from all sources. The confusion causes inconsistencies in how different respondents assign meaning to and answer the question.

Another source of ambiguity is the use indefinite words or response categories. Consider the words such as *often, occasionally, usually, regularly, frequently, many, good, fair,* and *poor*. Each of these words has many meanings. For one person frequent reading of *Time* magazine may be reading six or seven issues a year; for another it may be two issues a year. The word *fair* has great variety of meanings; the same is true for many indefinite words.

4. Avoid Double-Barreled Questions

Make each question about one and only one. A double barreled question consists of two or more questions joined together. It makes the respondent's answer ambiguous. For example, if asked, "Does this company have pension and health insurance benefits?" a respondent at the company with health insurance benefits only might answer either yes or no. The response has an ambiguous meaning and the researcher cannot be certain of the respondent's intentions. When multiple questions are asked in one question, the results may be exceedingly difficult to interpret.

5. Avoid Leading Questions

Make respondents feel that all responses are legitimate. Do not let them aware of an answer that the researcher wants. A leading question is the one that leads the respondent to choose one response over another by its wording. For example, the question, "you don't smoke, do you?"

leads respondents to state that they do not smoke. "Don't you think that women should be empowered?" In most the cases the respondent is likely to agree with the statement.

6. Avoid Loaded Questions

Loaded questions suggest a socially desirable answer or are emotionally charged. "Should the city government repair all the broken streets?" Most of the people are going to agree with this question simply because this is highly socially desirable. A question which may be challenging the traditionally set patterns of behavior may be considered as emotionally charged i.e. it is loaded with such material which may hit the emotions of the people. Look at some behaviors associated with masculinity in Pakistani society. Let us ask a husband "Have you ever been beaten up by your wife?" Straight away this question may be considered to be a challenge to the masculinity of the person. Hence it may be embarrassing for the person to admit such an experience. Therefore, even if the husband was beaten up by his wife, he might give a socially desirable answer.

7. Avoid Burdensome Questions that may Tax the Respondent's Memory

A simple fact of human life is that people forget. Researchers writing questions about past behavior or events should recognize that certain questions may make serious demand on the respondent's memory. "How did you feel about your brother when you were 6 years old?" It may very difficult to recall something from the childhood.

8. Arrange Questions in a Proper Sequence

The order of question, or the question sequence, may serve several functions for the researcher. If the opening questions are interesting, simple to comprehend and easy to answer then respondent's cooperation and involvement can be maintained throughout the questionnaire. If respondent's curiosity is not aroused at the outset, they can become disinterested and terminate the interview.

Sequencing specific questions before asking about broader issues is a common cause of question order bias. In some situations it may be advisable to ask general question before specific question to obtain the freest opinion of the respondent. This procedure, known as **funnel technique,** allows the researcher to understand the respondent's frame of reference before asking specific questions about the level of respondent's information and intensity of his or her opinions.

9. Use Filter Question, if Needed

Asking a question that doesn't apply to the respondent or that the respondent is not qualified to answer may be irritating or may cause a biased response. Including filter question minimizes the chance of asking questions that are inapplicable. Filter question is that question which screens out respondents not qualified to answer a second question. For example the researcher wants to know about the bringing up of one's children. "How much time do you spend playing games with your oldest child?" What if the respondent is unmarried? Even if the respondent is married but does not have the child. In both these situations the question is inapplicable to him/her. Before this question the person may put a filter question whether or not the respondent is married.

10. Layout of the questionnaire

There are two format or layout issues: the overall physical layout of the questionnaire and the format of questions and responses.
Good lay out and physical attractiveness is crucial in mail, Internet, and other self-administered questionnaires. For different reason it is also important to have a good layout in questionnaires designed for personal and telephone interviews.
Give each question a number and put identifying information on questionnaire. Never cramp questions together or create a confusing appearance.
Make a cover sheet or face sheet for each, for administrative use. Put the time and date of the interview, the interviewer, the respondent identification number, and interviewer's comments and observations on it. Give interviewers and respondents instructions on the questionnaire. Print instructions in a different style from question to distinguish them.
Lay out is important for mail questionnaires because there is no friendly interviewer to interact with the respondent. Instead the questionnaire's appearance persuades the respondents. In mail surveys, include a polite, professional cover letter on letterhead stationery, identifying the researcher and offering a telephone number for any questions. Always end with "Thank you for your participation."

Lesson 24: PILOT TESTING OF THE QUESTIONNAIRE

Pilot testing also called pre-testing means small scale trial run of a particular component; here we are referring to pilot testing of the questionnaire.

Conventional wisdom suggests that pre-testing not only is an established practice for discovering errors but also is useful for extra training the research team. Ironically, professionals who have participated in scores of studies are more likely to pretest an instrument than is a beginning researcher hurrying to complete a project. Revising questions five or more times is not unusual. Yet inexperienced researchers often underestimate the need to follow the design-test-revise process.

It is important to pilot test the instrument to ensure that the questions are understood by the respondents and there are no problems with the wording or measurement. Pilot testing involves the use of a small number of respondents to test the appropriateness of the questions and their comprehension. Usually, the draft questionnaire is tried out on a group that is selected on a convenience and that is similar in makeup to the one that ultimately will be sampled. Making a mistake with 25 or so subjects can avert the disaster of administering an invalid questionnaire to several hundred individuals. Hence the main purpose of pilot testing is to identify potential problems with the methods, logistics, and the questionnaire.

Administering a questionnaire exactly as planned in the actual study often is not possible. For example, mailing out a questionnaire might require several weeks. Pre-testing a questionnaire in this manner might provide important information on response rate, but it may not point out why questions were skipped or why respondents found certain questions ambiguous or confusing. The ability of personal interviewer to record requests for additional explanation and to register comments indicating respondent's difficulty with question sequence or other factors is the primary reason why interviewers are often used for pretest work.

What aspects to be evaluated during pilot testing?

1. Reactions of Respondents:

The reactions of the respondents can be looked at from different angles. The researcher may be familiar with the local culture; still getting the firsthand experience is always useful. Going to the field, contacting the people, and their reactions to the different aspects of research may be a learning experience.

- **Availability of study population timing.** In case we are doing interviewing then pre-testing might help to find out the most appropriate time when the respondent shall be available. The researcher can plan the interviewing accordingly.
- **Acceptability of the questions asked.** An important purpose of pre-testing is to discover participants' reaction to the questions. If the participants do not find the experience stimulating when an interviewer is physically present, how will they react on the phone, or in the self-administered mode? Pre-testing should help to discover where repetitiveness or redundancy is bothersome or what topics were not covered that the participant expected. An alert interviewer will look for questions or even sections that the participant perceives to be sensitive or threatening or topics about which the participant knows nothing.

Pre-testing will also provide the opportunity to see the acceptability of the wording of the questions in the local cultural context. Some of the issues may be discussed openly while for others people use a disguised language. If people consider the use of certain phrases as offensive, then it is high time to change the wording.

- **Willingness of the respondents to co-operate.** Field testing of the questionnaire will give the idea about the level of cooperation the research team is likely to get from the respondents, particularly if they have to interview them.

2. Discovering errors in the instrument:

- **Do the tools provide you the information? Reliability. Suitability for analysis.** Tabulation of the results /of a pretest helps determine whether the questionnaire will meet the objectives of the research. A preliminary analysis often illustrates that although respondents can easily comprehend and answer a given question, it is an inappropriate question because it does not help solving the issue. The information may not be suitable for analysis.
- **Time taken/needed to interview/conduct the observation.** Pre-testing can indicate the time taken for interview or to conduct the observation. Too long questionnaires may not be recommended and, therefore, need modification. It can also help in estimating average time being taken to collect information form a respondent. Such an exercise can help in budget estimations.
- **If there is any need to revise the format of the tool.** Question arrangement can play a significant role in the success of the instrument. May be we should start **with** stimulating questions and place sensitive questions last. Such a situation might be handled through pre-testing. Therefore, pre-testing may help in putting questions in proper **sequence, using acceptable wording, doing appropriate translation, question spacing, structuring of answers, coding system, and needing instructions for interviewers (probing).**

3. Sampling procedure can be checked:

- **The extent to which instructions given are followed.** Field functionaries are given the instructions for following a sampling procedure. Depending upon the type of sampling to be followed, the field worker must follow the guidelines otherwise the quality of the study will be hampered. During the pre-testing one could see not only the extent to which the instructions are being followed but also locate the problems in carrying out those instructions. Also what could be the solutions to those problems?
- **How much time is needed to locate the respondents?** By following the instructions how easy it is to locate the respondents, and how much time is needed to do that activity. It could help in calculating the overall time for data collection, having relevancy for budgeting the resources.

4. Staffing and activities of research team can be checked:

- **How successful the training has been?** Pre-testing can be seen as a period of extra training. The pre-testing exercise can provide a good opportunity to make an evaluation of the achievement of the objectives of training. For any deficiencies additional training may be provided.

- **What is the work output of each member?** The researcher can calculate the average output of each fieldworker and accordingly calculate the number of workers needed to finish the work on time. It can also help in making the budget estimates.
- **How well the research team works together?** It is a good opportunity to observe the kind of coordination the research team has. The integrated work is likely affect the efficiency of the team. Any shortcomings could be looked after.
- **Is the logistical support adequate?** Of course we are leaving the field functionaries in isolation. They shall be in need of other logistical support like the transportation, boarding, lodging, guidance and supervision. Some of these aspects could also be appraised during the pre-testing.

5. Procedure for data processing and analysis can be evaluated:

- **Make dummy tables.** See how can we tabulate the data and use the appropriate statistics for purposes of interpretations.

Lesson 25: INTERVIEWING

A personal interviewer administering a questionnaire door to door, a telephone interviewer calling from a central location, an observer counting pedestrians in a shopping mall, and others involved in the collection of data and the supervision of that process are all **fieldworkers.** The activities they perform vary substantially. The supervision of data collection for a mail survey differs from the data collection in an observation study. Nevertheless there are some basic issues in all kinds of fieldwork. Just for convenience, in this session we shall focus on the interviewing process conducted by personal interviewers. However, many of the issues apply to all fieldworkers, no matter what their specific setting.

Who conducts the fieldwork?

Data collection in a sponsored study is rarely carried out by the person who designs the research project. For a student, depending upon the sample size, data collection is usually done by the student himself/herself. However, the data collection stage is crucial, because the research project is no better than the data collected in the field. Therefore, it is important that the research administrator selects capable people who may be entrusted to collect the data.

There are Field Interviewing Services, who specialize in data gathering. These agencies perform door-to-door surveys, central location telephone interviewing, and other forms of fieldwork for fee. These agencies typically employ field supervisors who oversee and train interviewers, edit questionnaires completed in the field, and confirm that the interviews have been conducted.

Whether the research administrator hires in-house interviewers or selects a field interviewing service, it is desirable to have fieldworkers meet certain job requirements. Although the job requirements for different types of surveys vary, normally interviewers should be healthy, outgoing, honest, accurate, responsible, motivated, and of pleasing appearance – well groomed and properly dressed.
An essential part of the interviewing process is establishing rapport with the respondent.

In-House Training

After personnel are selected, they must be trained. The training that the interviewer will receive after being selected by a company may vary from virtually no training to one week program. Almost always there will be a **briefing session** on the particular project.

The objective of training is to ensure that the data collection instrument is administered uniformly by all fieldworkers. The goal of training session is to ensure that each respondent is provided with common information. If the data are collected in a uniform manner from all respondents, the training session will have been success.

More extensive training programs are likely to cover the following topics:

1. How to make initial contact with the respondent and secure the interview?
2. How to ask survey questions?
3. How to probe?
4. How to record responses? How to terminate the interview?

The Role of the Interviewer

Survey research interviewing is a specialized kind of interviewing. As with the most interviewing, its goal is to obtain accurate information from another person.

The survey interview is a social relationship. Like other social relationships, it involves social roles, norms, and expectations. The interview is a short-term, secondary social interaction between two strangers with the explicit purpose of one person's obtaining specific information from the other. The social roles are those of the interviewer and the interviewee or respondent. Information is obtained in a structured conversation in which the interviewer asks prearranged questions and records answers, and the respondent answers.

The role of interviewer is difficult. They obtain cooperation and build rapport, yet remain neutral and objective. They encroach on respondents' time and privacy for information that may not benefit the respondents. They try to reduce embarrassment, fear, and suspicion so that respondents feel comfortable revealing information. They explain the nature of the survey research or give hints about social roles in an interview. Good interviewers monitor the pace and direction of the social interaction as well as content of the answers and the behavior of the respondents.

Survey interviewers are nonjudgmental and do not reveal their opinions, verbally or nonverbally. If the respondent asks for an interviewer's opinion, he or she politely redirects the respondent and indicate that such questions are inappropriate.

Stages of an Interview

Making Initial Contact and Securing the Interview

The interview proceeds through stages, beginning with introduction and entry. Interviewers are trained to make appropriate opening remarks that will convince the person that his or her cooperation is important.

Asslaam-o-Alaykum, my name is _____ and I am working for a National Survey Company. We are conducting a survey concerning "women empowerment." I would like to get a few of your ideas.

For the initial contact in a telephone interview, the introduction might be:

Asslaam-o-Alaykum, my name is _____. I am calling from Department of Social Research, Virtual University.

By indicating that telephone call is a long distance, interviewers attempt to capitalize on the fact that most people feel a long distance call is something special, unusual, or important. Giving one's personal name personalizes the call.

Personal interviewers may carry a letter of identification that will indicate that the study is bona fide research project and not a salesman's call. The name of the research agency is used to assure the respondent that the caller is trustworthy.

Asking the Questions

The purpose of the interview is, of course, to have the interviewer ask questions and record the respondent's answers. Training in the art of stating questions can be extremely beneficial, because interviewer bias can be a source of considerable error in survey research.

There are five major principles for asking questions:

- Ask the questions exactly as they are worded in the questionnaire.
- Read each question very slowly.
- Ask the question in the order in which they are presented in the questionnaire.
- Repeat questions that are misunderstood or misinterpreted.

Although interviewers are generally trained in these procedures, when working in the field many interviewers do not follow them exactly. Do not take shortcuts when the task becomes monotonous. Interviewers may shorten questions or rephrase unconsciously when they rely on their memory of the question rather than reading the question as it is worded.

If the respondents do not understand a question, they will usually ask for some clarification. The recommended procedure is to repeat the question, or if the respondent does not understand a word, the interviewer should respond with "just whatever it means to you.

Often the respondents volunteer information relevant to a question that is supposed to be asked at a later point in the research. In this situation the response should be recorded under the question that deals specifically with that subject. Then rather than skip the question that was answered out of sequence, the interviewers should be trained to say something like "We have briefly discussed this, but let me ask you …." By asking every question, the interviewer can be sure that complete answers are recorded.

Probing

Probing means the verbal prompts made by field worker when the respondent must be motivated to communicate his or her answer or to enlarge on, clarify or explain an answer. Probing may be needed for two types of situations. First, it is necessary when the respondent must be motivated to enlarge on, clarify, or explain his or her answer. The interviewer must encourage the respondent to clarify or expand on answers by providing a stimulus that will not suggest the interviewer's own ideas. The ability to probe with neutral stimuli is the mark of an experienced interviewer. Second, probing may be necessary in situations in which the respondent begins to ramble or lose track of the question. In such cases the respondent must be led to focus on specific content of the interview and to avoid irrelevant and unnecessary information. Probing is also needed when the interviewer recognizes an irrelevant or inaccurate answer.

He interviewer has several possible probing tactics to choose from, depending on the situation:

- *Repetition of the question.* The respondent who remains completely silent may not have understood the question or may not have decided how to answer it. Mere repetition may encourage the respondent to answer in such cases. For example, if the question is "What is there that you do not like about your supervisor?" and the

respondent does not answer, the interviewer may probe: "just to check, is there anything you do not like about your supervisor?"

- *An expectant pause*. If the interviewer believes the respondent has more to say, the "silent probe," accompanied by an expectant look may motivate the respondent to gather his/her thoughts and give a complete response.
- *Repetition of the respondent's reply.* As the interviewer records the response, he or she may repeat the respondent's reply verbatim. This may stimulate the respondent to expand on the answer.
- *Neutral questions or comments.* Asking neutral question may indicate the type of information that the interviewer is seeking. For example, if the interviewer believes that the respondent's motives should be clarified, he or she might ask, "Why do you feel that way?" If the interviewer feels that there is a need to clarify a word or phrase, then he/she might ask, "What do you mean by _____?"

Recording the Responses

The rules for recording responses to closed ended questions vary with the specific question. The general rule, however, is to place a check in the box that correctly reflects the respondent's answer.

The general instructions for recording answers to open-ended response questions is to record the answer verbatim, a task that is difficult for most people. Some of the suggestions are:

- Record responses during the interview.
- Use the respondent's own words.
- Do not summarize or paraphrase the respondent's answer.
- Include everything that pertains to the question objectives.
- Include all your probes.

Terminating the Interview

Fieldworkers should not close the interview before all the information has been secured. The interviewer whose departure is hasty will not be able to record those spontaneous comments respondents sometimes offer after all formal questions have been asked. Avoiding hasty departures is also a matter of courtesy.

Fieldworkers should also answer to the best of their ability any questions the respondent has concerning the nature and purpose of the study. Always leave by observing the local cultural customs. "Don't burn your bridges." Because the fieldworker may be required to re-interview the respondent at some future time, he or she should leave the respondent with positive feeling about having cooperated in a worthwhile undertaking. It is extremely important to thank the respondent for his or her cooperation.

The interviewer then goes to a quiet and private place to edit the questionnaire and record other details such as the date, time, and place of interview; a thumbnail sketch of the respondent and interview situation, the respondent's attitude; and any unusual circumstances. The interviewer also records personal feelings and anything that was suspected.

Principles of Interviewing

The Basics

Have integrity and be honest. This is the cornerstone of all professional inquiry, regardless of its purpose.

Have patience and tact. Interviewers ask for information from people they do not know. Thus all the rules of human relations that apply to inquiry situations – patience, tact, courtesy – apply "in spades" to interviewing.

Have attention to accuracy and detail. Among the greatest interviewing "sins" are inaccuracy and superficiality, for the professional analyst can misunderstand, and in turn mislead, a client. Do not record the answer unless you fully understand it yourself. Probe for clarification and to get detailed answers.

Exhibit a real interest in the inquiry at hand, but keep your opinions to yourself. Impartiality is imperative.

Be a good listener. Some interviewers talk too much, wasting time when respondents could be supplying more pertinent facts or opinions on the topic.

Keep the inquiry and respondents' responses confidential. Do not discuss the studies you are doing with relatives, friends, or associates. Never quote one respondent's opinion to another.

Respect others' rights. Survey research depends on the goodwill of others to provide information. There should be no coercion. Impress on prospective respondents that their cooperation is important and valuable.

Interview Bias

- Information obtained during interview should be as free as possible of bias.
- Bias could be introduced by the interviewer, interviewee, or the situation. Interviewer bias falls into six categories:

Interviewer Bias

1. Interviewer could bias the data if proper rapport is not established Errors by the respondent – forgetting, embarrassment, misunderstanding, or lying because of the presence of others.
2. Unintentional errors or interviewer sloppiness – contacting the wrong person, misreading a question, omitting questions, reading questions in the wrong order, recording wrong answer, or misunderstanding the respondent.
3. Intentional subversion by the interviewer – purposeful alteration of answers, omission or rewording of questions, or choice of an alternative respondent.
4. Influence due to the interviewer's expectations about a respondent's appearance, living situation, or other answers.
5. Failure of an interviewer to probe or to probe properly.
6. Influence on the answers due to the interviewer's appearance, tone, attitude, reactions to answers, or comments made outside of the interview schedule.

Interviewee Bias

- Errors made by the respondent;

1. Interviewees can bias the data when they do not come out with their true opinion but provide information that they think what the interviewer expects of them or would like to hear.
2. They do not understand the question; they may feel difficult or hesitant to clarify.
3. Some interviewees may be turned off because of the personal liking, or the dress of the interviewer, or the manner in which questions are put. So they may not provide truthful answers.
4. Some may provide socially undesirable answers.

Situational Bias

- Situational biases in terms of:

1. Non-participants – Unwillingness or inability to participate. Bias the sample.
2. Trust levels and rapport established by different interviewers. Elicit answers of different degrees of openness.
3. The physical setting of the interview. Respondent may not feel comfortable to be interviewed at work.

Some Tips for Interviewing

- Know the culture of the people in advance.
- Appearance – wear acceptable dress.
- Pleasantness and flexibility.
- Carry the letter of authority.
- Establish credibility and rapport. Motivating individuals to respond.
- Familiarity with the questionnaire.
- Following the question wording/ question order
- Recording responses exactly.
- Probing for responses.
- Closing the interview. No false promises. Also don't burn your bridges.
- Edit the questionnaire in the first available opportunity.

Lesson 26: SAMPLE AND SAMPLING TERMINOLOGY

A **sample** is a subset, or some part, of a larger whole. A larger whole could be anything out which sample is taken. That 'whole' could be a bucket of water, a bag of sugar, a group of organizations, a group of students, a group of customers, or a group mid-level managers in an organization. A complete group of entities sharing some common set of characteristics is population. In other words, the totality out of which sample is drawn is referred to as **population.**

Why sample?

1. **Saves Cost, Labor, and Time**

Applied research projects usually have budget and time constraints. Since sample can save financial cost as well as time, therefore, to go for sample study is pragmatic.
Of course, a researcher investigating a population with an extremely small number of population elements may elect to conduct a study on the total population rather than a sample because cost, labor, and time constraints are relatively insignificant.
Although sample study cuts costs, reduces labor requirements, and gathers vital information quickly, yet there could be other reasons.

2. **Quality Management/supervision**

Professional fieldworkers are a scarce commodity. In a large study rather than employing less qualified staff it may be advisable to do a sample study and employ highly qualified professional fieldworkers. It can certainly affect the quality of the study. At the same time it may be easier to manage a small group and produce quality information. Supervision, record keeping, training, and so forth would all be more difficult in a very large study.

3. **Accurate and Reliable Results**

Another major reason for sampling is that samples, if properly selected, are sufficiently accurate in most of the cases. If the elements of a population are quite similar, only a small sample is necessary to accurately portray the characteristics of interest. Most of us have had blood samples taken from the finger, the arm, or another part of body. The assumption is that blood is sufficiently similar throughout the body, the characteristics of the blood can be determined on the basis of sample.
When the elements of population are highly homogenous, samples are highly representative of the population. Under these circumstances almost any sample is as good as another.
Samples may be more accurate than census. In a census study of large population there is a greater likelihood of non-sampling errors. In a survey mistakes may occur that are unrelated to the selection of people in the study. For example, a response may be coded incorrectly, or the keyboard operator might make data entry error. Interviewer mistakes, tabulation errors, and other non-sampling errors may increase during census because of the increased volume of work. In sample increased accuracy is possible because the fieldwork and tabulation of the data can be closely supervised than would be possible in a census. In field survey, a small, well trained, closely supervised group may do a more careful and accurate job of collecting information than a large group of nonprofessional interviewers trying to contact everyone.

4. Sampling may be the Only Way

Many research projects, especially those in quality control testing, require the destruction of the items being tested. If the manufacturer of firecrackers wished to find out whether each product met a specific production standard, there would be no product left after testing. Similarly, consider the case of electric bulbs. In testing the life of bulbs, if we were to burn every bulb produced, there would be none left to sell. This is destructive sampling.

5. Determine the Period of Study

Interviewing every element of a large population without sampling requires lot of time, may be a year or more. In such a long period study, even the seasonal variation may influence the response pattern of the respondents. For example, if the study was aimed at measuring the level of unemployment in a given large city, the unemployment rate produced by the survey data would not refer to the city as of the beginning of interviewing or as of the end. Researcher may be forced to attribute the unemployment to some hypothetical date, representing to the midpoint of the study period. Hence it will be difficult to determine the exact timing to which the data of the study pertains.

Sampling Terminology

There are a number of technical terms used in books on research and statistics which need explanation. Some of the important terms are:

Element

An element is that unit about which information is collected and which provides the basis of analysis. Typically, in survey research, elements are people or certain types of people. It is that unit about which information is collected and that provides the basis of analysis. It can be a person, groups, families, organizations, corporations, communities, and so forth.

Population

A population is the theoretically specified aggregation of study elements. It is translating the abstract concept into workable concept. For example, let us look at the study of "college students." Theoretically who are the college students? They might include students registered in government colleges and/or private colleges, students of intermediate classes and/or graduate classes, students of professional colleges and/or non-professional colleges, and many other variations. In this way the pool of all available elements is population.

Target Population

Out of the conceptual variations what exactly the researcher wants to focus on. This may also be called a target population. Target population is the complete group of specific population elements relevant to the research project. Target population may also be called *survey population* i.e. that aggregation of elements from which the survey sample is actually selected.

At the outset of the sampling process, it is vitally important to carefully define the target population so the proper source from which the data are to collected can be identified. In our

example of 'college students" finally we may decide to study the college students from government institutions located in Lahore, who are studying social sciences, who are aged 19 years of age, and hailing from rural areas.

Sampling

Sampling is the process of using a small number of items or parts of a larger population to make conclusions about the whole population. It enables the researchers to estimate unknown characteristics of the population.

Sampling Frame

In actual practice the sample will be drawn from a list of population elements that is often different from the target population that has been defined. A sampling frame is the list of elements from which the sample may be drawn. A simple example could be listing of all college students meeting the criteria of target population and who are enrolled on the specified date.

A sampling frame is also called the *working population* because it provides the list that can be worked with operationally. In our example, such a list could be prepared with help of the staff of the selected colleges.

Sampling Frame Error

A sampling frame error occurs when certain sample elements are excluded or when the entire population is not accurately represented in the sampling frame. The error that occurs when certain sample elements are not listed or available and are not represented in the sampling frame.

Sampling Unit

A sampling unit is that element or set of elements considered for selection in some stage of sampling. Sampling may be done in single stage or in multiple stages. In a simple, single-stage sample, the sampling units are the same as the elements. In more complex samples, however, different levels of sampling units may be employed. For example, a researcher may select a sample of *Mohallahs* in a city, and then select a sample of households from the selected *Mohallahs*, and finally may select a sample of adults from the selected households. The sampling units of these three stages of sampling are respectively *Mohallah*, households, and adults, of which the last of these are the elements. More specifically, the terms "primary sampling units," "secondary sampling units," and "final sampling units" would be used to designate the successive stages.

Observation Unit

An observation unit, or unit of data collection, is an element or aggregation of elements from which the information is collected. Often the unit of analysis and unit of observation are the same – the individual person – but this need not be the case. Thus the researcher may interview heads of household (the observation units) to collect information about every member of the household (the unit of analysis).

Parameter

A parameter is the summary description of a given variable in a population. The mean income of all families in a city and the age distribution of the city's population are parameters. An important part portion of survey research involves the estimation of population parameters on the basis of sample observation.

Statistic

A statistic is the summary description of a given variable in a survey sample. Thus the mean income computed from the survey sample and the age distribution of that sample are statistics. Sample statistics are used to make estimates of the population parameters.

Sampling Error

Probability sampling methods seldom, if ever, provide statistics exactly equal to the parameters that they are used to estimate. Probability theory, however, permits us to estimate the error to be expected for a given sample (more information to be sought from professional in Statistics).

Lesson 27: PROBABILITY AND NON-PROBABILITY SAMPLING

There are several alternative ways of taking a sample. The major alternative sampling plans may be grouped into probability techniques and non-probability techniques. In **probability sampling** every element in the population has a *known nonzero probability* of selection. The simple random is the best known probability sample, in which each member of the population has an equal probability of being selected. Probability sampling designs are used when the representativeness of the sample is of importance in the interest of wider generalizability. When time or other factors, rather than generalizability, become critical, non-probability sampling is generally used.

In non-probability sampling the probability of any particular element of the population being chosen is unknown. The selection of units in non-probability sampling is quite arbitrary, as researchers rely heavily on personal judgment. It should be noted that there are no appropriate statistical techniques for measuring random sampling error from a non-probability sample. Thus projecting the data beyond the sample is statistically inappropriate. Nevertheless, there are occasions when non-probability samples are best suited for the researcher's purpose.

Types of non-probability sampling:

In non-probability sampling designs, the elements in the population do not have any probabilities attached to their being chosen as sample subjects. This means that the findings from the study of the sample cannot be confidently generalized to the population. However the researchers may at times be less concerned about generalizability than obtaining some preliminary information in a quick and inexpensive way. Sometimes non-probability could be the only way to collect the data.

Convenience Sampling

Convenience sampling (also called *haphazard or accidental sampling*) refers to sampling by obtaining units or people who are most conveniently available. For example, it may be convenient and economical to sample employees in companies in a nearby area, sample from a pool of friends and neighbors. The person-on-the street interview conducted by TV programs is another example. TV interviewers go on the street with camera and microphone to talk to few people who are convenient to interview. The people walking past a TV studio in the middle of the day do not represent everyone (homemakers, people in the rural areas). Likewise, TV interviewers select people who look "normal" to them and avoid people who are unattractive, poor, very old, or inarticulate.

Another example of haphazard sample is that of a newspaper that asks the readers to clip a questionnaire from the paper and mail it. Not everyone reads the newspaper, has an interest in the topic, or will take the time to cut out the questionnaire, and mail it. Some will, and the numbers who do so may seem large, but the sample cannot be used to generalize accurately to the population.

Convenience samples are least reliable but normally the cheapest and easiest to conduct. Convenience sampling is most often used during the exploratory phase of a research project and is perhaps the best way of getting some basic information quickly and efficiently. Often such sample is taken to test ideas or even to gain ideas about a subject of interest.

Purposive Sampling

Depending upon the type of topic, the researcher lays down the criteria for the subjects to be included in the sample. Whoever meets that criteria could be selected in the sample? The researcher might select such cases or might provide the criteria to somebody else and leave it to his/her judgment for the actual selection of the subjects. That is why such a sample is also called as **judgmental or expert opinion sample.** For example a researcher is interested in studying students who are enrolled in a course on research methods, are highly regular, are frequent participants in the class discussions, and often come with new ideas. The criteria has been laid down, the researcher may do this job himself/herself, or may ask the teacher of this class to select the students by using the said criteria. In the latter situation we are leaving it to the judgment of the teacher to select the subjects. Similarly we can give some criteria to the fieldworkers and leave it to their judgment to select the subjects accordingly. In a study of working women the researcher may lay down the criteria like: the lady is married, has two children, one of her child is school going age, and is living in nuclear family.

Quota Sampling

A sampling procedure that ensures that certain characteristics of a population sample will be represented to the exact extent that the researcher desires. In this case the researcher first identifies relevant categories of people (e.g. male and female; or under age 30, ages 30 to 60, over 60, etc.) then decides how many to get in each category. Thus the number of people in various categories of sample is fixed. For example the researcher decides to select 5 males and 5 females under age 30, 10 males and 10 females aged 30 to 60, and 5 males and 5 females over age 60 for a 40 person sample. This is quota sampling.

Once the quota has been fixed then the researcher may use convenience sampling. The convenience sampling may introduce **bias**. For example, the field worker might select the individual according to his/her liking, who can easily be contacted, willing to be interviewed, and belong to middle class.
Quota sampling can be considered as a form of proportionate stratified sampling, in which a predetermined proportion of people are sampled from different groups, but on a convenience basis.
Speed of data collection, lower costs, and convenience are the major advantages of quota sampling compared to probability sampling. Quota sampling becomes necessary when a subset of a population is underrepresented, and may not get any representation if equal opportunity is provided to each. Although there are many problems with quota sampling, careful supervision of the data collection may provide a representative sample of the various subgroups within the population.

Snowball Sampling

Snowball sampling (also called *network, chain referral, or reputational sampling*) is a method for identifying and sampling (or selecting) cases in the network. It is based on an analogy to a snowball, which begins small but becomes larger as it is rolled on wet snow and picks up additional snow. It begins with one or a few people or cases and spreads out on the basis of links to the initial cases.
This design has been found quite useful where respondents are difficult to identify and are best located through referral networks. In the initial stage of snowball sampling, individuals are

discovered and may or may not be selected through probability methods. This group is then used to locate others who possess similar characteristics and who, in turn, identify others. The "snowball" gather subjects as it rolls along.

For example, a researcher examines friendship networks among teenagers in a community. He or she begins with three teenagers who do not know each other. Each teen names four close friends. The researcher then goes to the four friends and asks each to name four close friends, then goes to those four and does the same thing again, and so forth. Before long, a large number of people are involved. Each person in the sample is directly or indirectly tied to the original teenagers, and several people may have named the same person. The researcher eventually stops, either because no new names are given, indicating a closed network, or because the network is so large that it is at the limit of what he or she can study.

Sequential Sampling

Sequential sampling is similar to purposive sampling with one difference. In purposive sampling, the researcher tries to find as many relevant cases as possible, until time, financial resources, or his or her energy is exhausted. The principle is to get every possible case. In sequential sampling, a researcher continues to gather cases until the amount of new information or diversity is filled. The principle is to gather cases until a saturation point is reached. In economic terms, information is gathered, or the incremental benefit for additional cases, levels off or drops significantly. It requires that the researcher continuously evaluates all the collected cases. For example, a researcher locates and plans in-depth interviews with 60 widows over 70 years old who have been living without a spouse for 10 or more years. Depending on the researcher's purposes, getting an additional 20 widows whose life experiences, social background, and worldview differ little from the first 60 may be unnecessary.

Theoretical Sampling

In theoretical sampling, what the researcher is sampling (e.g. people, situation, events, time periods, etc.) is carefully selected, as the researcher develops grounded theory. A growing theoretical interest guides the selection of sample cases. The researcher selects cases based on new insights they may provide.
For example, a field researcher may be observing a site and a group of people during week days. Theoretically, the researcher may question whether the people act the same at other times or when other aspects of site change. He or she could then sample other time periods (e.g. nights and weekends) to get more full picture and learn whether important conditions are the same.

Lesson 28: TYPES OF PROBABILITY SAMPLING

Probability samples that rely on random processes require more work than nonrandom ones. A researcher must identify specific sampling elements (e.g. persons) to include in the sample. For example, if conducting a telephone survey, the researcher needs to try to reach the specific sampled person, by calling back several times, to get an accurate sample.

Random samples are most likely to yield a sample that truly represents the population. In addition, random sampling lets a researcher statistically calculate the relationship between the sample and the population – that is the size of *sampling error.* A non-statistical definition of the sampling error is the deviation between sample result and a population parameter due to random process.

Simple Random Sample

The simple random sample is both the easiest random sample to understand and the one on which other types are modeled. In simple random sampling, a research develops an accurate sampling frame, selects elements from sampling frame according to mathematically random procedure, then locates the exact element that was selected for inclusion in the sample.

After numbering all elements in a sampling frame, the researcher uses a list of random numbers to decide which elements to select. He or she needs as many random numbers as there are elements to be sampled: for example, for a sample of 100, 100 random numbers are needed. The researcher can get random numbers from a random number table, a table of numbers chosen in a mathematically random way. Random-number tables are available in most statistics and research methods books. The numbers are generated by a pure random process so that any number has an equal probability of appearing in any position. Computer programs can also produce lists of random number. A random starting point should be selected at the outset.

Random sampling does not guarantee that every random sample perfectly represents the population. Instead, it means that most random samples will be close to the population most of the time, and that one can calculate the probability of a particular sample being inaccurate. A researcher estimates the chance that a particular sample is off or unrepresentative by using information from the sample to estimate the sampling distribution. The sampling distribution is the key idea that lets a researcher calculate sampling error and confidence interval.

Systematic Random Sample

Systematic random sampling is simple random sampling with a short cut for random selection. Again, the first step is to number each element in the sampling frame. Instead of using a list of random numbers, researcher calculates a *sampling interval*, and the interval becomes his or her own quasi random selection method. The sampling interval (i.e. 1 in *K where K is some number)* tells the researcher how to select elements from a sampling frame by skipping elements in the frame before one for the sample.

Sampling intervals are easy to compute. We need the sample size and the population size. You can think of the sample interval as the inverse of the sampling ratio. The sampling ratio for 300 names out of 900 will be 300/900 = .333 = 33.3 percent. The sampling interval is 900/300 = 3

Begin with a random start. The easiest way to do this is to point blindly at a number from those from the beginning that are likely to be part of the sampling interval.
When the elements are organized in some kind of cycle or pattern, the systematic sampling will not give a representative sample.

Stratified Random Sample

When the population is heterogeneous, the use of simple random sample may not produce representative sample. Some of the bigger strata may get over representation while some of the small ones may entirely be eliminated. Look at the variables that are likely to affect the results, and stratify the population in such a way that each stratum becomes homogeneous group within itself. Then draw the required sample by using the table of random numbers. Hence in stratified random sampling a sub-sample is drawn utilizing simple random sampling within each stratum. (Randomization is not done for quota sampling).

There are three reasons why a researcher chooses a stratified random sample: (1) to increase a sample's statistical efficiency, (2) to provide adequate data for analyzing the various subpopulations, and (3) to enable different research methods and procedures to be used in different strata.

1. Stratification is usually more efficient statistically than simple random sampling and at worst it is equal to it. With the ideal stratification, each stratum is homogeneous internally and heterogeneous with other strata. This might occur in a sample that includes members of several distinct ethnic groups. In this instance, stratification makes a pronounced improvement in statistical efficiency.

   Stratified random sampling provides the assurance that the sample will accurately reflect the population on the basis of criterion or criteria used for stratification. This is a concern because occasionally simple random sampling yields a disproportionate number of one group or another, and the sample ends up being less representative than it could be.
   Random sampling error will be reduced with the use of stratified random sampling because each group is internally homogeneous but there are comparative differences between groups. More technically, a smaller standard error may result from stratified Sampling because the groups are adequately represented when strata are combined.

2. It is possible when the researcher wants to study the characteristics of a certain population subgroups. Thus if one wishes to draw some conclusions about activities in different classes of student body, stratified sampling would be used.
3. Stratified sampling is also called for when different methods of data collection are applied in different parts of the population. This might occur when we survey company employees at the home office with one method but mist use a different approach with employees scattered over the country.

Stratification Process

The ideal stratification would be based on the primary variable (the dependent variable) under study. The criterion is identified as an efficient basis for stratification. The criterion for

stratification is that it is a characteristic of the population elements known to be related to the dependent variable or other variables of interest. The variable chosen should increase homogeneity within each stratum and increase heterogeneity between strata.
Next, for each separate subgroup or stratum, a list of population elements must be obtained. Serially number the elements within each stratum. Using a table of random numbers or some other device, a separate simple random sample is taken within each stratum. Of course the researcher must determine how large a sample must be drawn from each stratum

Proportionate versus Disproportionate

If the number of sampling units drawn from each stratum is in proportion to the relative population size of the stratum, the sample is proportionate stratified sampling. Sometime, however, a disproportionate stratified sample will be selected to ensure an adequate number of sampling units in every stratum
In a disproportionate, sample size for each stratum is not allocated in proportion to the population size, but is dictated by analytical considerations.

Cluster Sampling

The purpose of cluster sampling is to sample economically while retaining the characteristics of a probability sample. Groups or chunks of elements that, ideally, would have heterogeneity among the members within each group are chosen for study in cluster sampling. This is in contrast to choosing some elements from the population as in simple random sampling, or stratifying and then choosing members from the strata, or choosing every nth case in the population in systematic sampling. When several groups with intra-group heterogeneity and inter-group homogeneity are found, then a random sampling of the clusters or groups can ideally be done and information gathered from each of the members in the randomly chosen clusters.

Cluster samples offer more heterogeneity within groups and more homogeneity among and homogeneity within each group and heterogeneity across groups.

Cluster sampling addresses two problems; researchers lack a good sampling frame for a dispersed population and the cost to reach a sampled element is very high. A cluster is unit that contains final sampling elements but can be treated temporarily as a sampling element itself. Researcher first samples clusters, each of which contains elements, then draws a second a second sample from within the clusters selected in the first stage of sampling. In other words, the researcher randomly samples clusters then randomly samples elements from within the selected clusters. He or she can create a good sampling frame of clusters, even if it is impossible to create one for sampling elements. Once the researcher gets a sample of clusters, creating a sampling frame for elements within each cluster becomes more manageable. A second advantage for geographically dispersed populations is that elements within each cluster are physically closer to each other. This may produce a savings in locating or reaching each element.

A researcher draws several samples in stages in cluster sampling. In a three-stage sample, stage 1 is random sampling of big clusters; stage 2 is random sampling of small clusters within each selected big cluster; and the last stage is sampling of elements from within the sampled within the sampled small clusters. First, one randomly samples the city blocks, then households within

blocks, then individuals within households. This can also be an example of **multistage area sampling.**
The unit costs of cluster sampling are much lower than those of other probability sampling designs. However, cluster sampling exposes itself to greater biases at each stage of sampling.

Double Sampling

This plan is adopted when further information is needed from a subset of the group from which some information has already been collected for the same study. A sampling design where initially a sample is used in a study to collect some preliminary information of interest, and later a sub-sample of this primary sample is used to examine the matter in more detail, is called double sampling.

What is the Appropriate Sample Design?

A researcher who must make a decision concerning the most appropriate sample design for a specific project will identify a number of sampling criteria and evaluate the relative importance of each criterion before selecting a sample design.

Degree of Accuracy

Selecting a representative sample is, of course, important to all researchers. However, the error may vary from project to project, especially when cost saving or another benefit may be a trade-off for reduction in accuracy.

Resources

The costs associated with the different sampling techniques vary tremendously. If the researcher's financial and human resources are restricted, this limitation of resources will eliminate certain methods. For a graduate student working on a master's thesis, conducting a national survey is almost always out of the question because of limited resources. Managers usually weigh the cost of research versus the value of information often will opt to save money by using non-probability sampling design rather than make the decision to conduct no research at all.

Advance Knowledge of the Population

Advance knowledge of population characteristics, such as the availability of lists of population members, is an important criterion. A lack of adequate list may automatically rule out any type of probability sampling.

National versus Local Project

Geographic proximity of population elements will influence sample design. When population elements are unequally distributed geographically, a cluster sampling may become more attractive.

Need for Statistical Analysis

The need for statistical projections based on the sample is often a criterion. Non-probability sampling techniques do not allow researcher to use statistical analysis to project the data beyond the sample.

Lesson 29: DATA ANALYSIS

Once the data begins to flow in, attention turns to data analysis. If the project has been done correctly, the analysis planning is already done. Back at the research design stage or at least by the completion of the proposal or the pilot test, decisions should have been made about how to analyze the data.

During the analysis stage several interrelated procedures are performed to summarize and rearrange the data. The goal of most research is to provide information. There is a difference between raw data and information.

Information

Information refers to a body of facts that are in a format suitable for decision making, whereas **data** are simply recorded measures of certain phenomenon. The raw data collected in the field must be transformed into information that will answer the sponsor's (e.g. manager's) questions. The conversion of raw data into information requires that the data be edited and coded so that the data may be transferred to a computer or other data storage medium.

If the database is large, there are many advantages to utilizing a computer. Assuming a large database, entering the data into computer follows the coding procedure.

Editing

Occasionally, a fieldworker makes a mistake and records an improbable answer (e.g., birth year: 1843) or interviews an ineligible respondent (e.g., someone too young to qualify). Seemingly contradictory answers, such as "no" to automobile ownership but "yes" to an expenditure on automobile insurance, may appear on a questionnaire. There are many problems like these that must be dealt with before the data can be coded. Editing procedures are conducted to make the data ready for coding and transfer to data storage.

Editing is the process of checking and adjusting the data for omissions, legibility, and consistency. Editing may be differentiated from coding, which is the assignment of numerical scales or classifying symbols to previously edited data.

The purpose of editing is to ensure the completeness, consistency, and readability of the data to be transferred to data storage. The editor's task is to check for errors and omissions on the questionnaires or other data collection forms.

The editor may have to reconstruct some data. For instance, a respondent may indicate weekly income rather than monthly income, as requested on the questionnaire. The editor must convert the information to monthly data without adding any extraneous information. The editor "should bring to light all hidden values and extract all possible information from a questionnaire, while adding nothing extraneous."

Field Editing

In large projects, field supervisors are often responsible for conducting preliminary field edits. The purpose of field editing the same day as the interview is to catch technical omissions (such

as a blank page), check legibility of the handwriting, and clarify responses that are logically or conceptually inconsistent. If a daily field editing is conducted, a supervisor who edits completed questionnaires will frequently be able to question the interviewers, who may be able to recall the interview well enough to correct any problems. The number of "no answers," or incomplete answers can be reduced with a rapid follow-up simulated by a field edit. The daily edit also allows fieldworkers to re-contact the respondent to fill in omissions before the situation has changed. The field edit may also indicate the need for further training of interviewers.

In-House Editing

Although almost simultaneous editing in the field is highly desirable, in many situations (particularly with mail questionnaires), early reviewing of the data is not possible. In-house editing rigorously investigates the results of data collection.

Editing for Consistency: The in-house editor's task is to ensure that inconsistent or contradictory responses are adjusted and that answers will not be a problem for coders and keyboard punchers. Consider the situation in which a telephone interviewer has been instructed to interview only registered voters that requires voters to be 18 years old. If the editor's reviews of a questionnaire indicate that the respondent was only 17 years of age, the editor's task is to eliminate this obviously incorrect sampling unit. Thus, in this example, the editor's job is to make sure that the sampling unit is consistent with the objectives of the study.
Editing requires checking for logically consistent responses. The in-house editor must determine if the answers given by a respondent to one question are consistent with those given to other, related questions. Many surveys utilize filter questions or skip questions that direct the sequence of questions, depending upon respondent's answer. In some cases the respondent will have answered a sequence of questions that should not have been asked. The editor should adjust these answers, usually to "no answer' or "inapplicable," so that the responses will be consistent.

Editing for Completeness: In some cases the respondent may have answered only the second portion of a two-part question, in that case research needs to edit data. An in-house editor may have to adjust the answers to the following question for completeness.

Does your organization have more than one Internet Web site? Yes ____ No. _____

If a respondent checked neither "yes" nor "No", but indicated three Internet Web sites, the editor may check the "yes" to ensure that this answer is not missing from the questionnaire.

Item Non-response: It is a technical term for an unanswered question on an otherwise complete questionnaire. Specific decision rules for handling this problem should be meticulously outlined in the editorial instructions. In many situations the decision rule will be to do nothing with the unanswered question: the editor merely indicates in item non response by writing a message instructing the coder to record a "missing value" or blank as the response. However, in case the response is necessary then the editor uses the **plug value.** The decision rule may to "plug in" an average or neutral value in each case of missing data. A blank response in an interval scale item with a mid-point would be to assign the mid-point in the scale as the response to that particular item. Another way is to assign to the item the mean value of the responses of all those who have responded to that particular item. Another choice is to give the item the mean of the responses of this particular respondent to all other questions measuring the variables. Another decision rule may be to alternate the choice of the response categories

used as plug values (e.g. "yes" the first time, "no" the second time, "yes" the third time, and so on).

The editor must also decide whether or not an entire questionnaire is "usable." When a questionnaire has too many (say 25%) answers missing, it may not be suitable for the planned data analysis. In such a situation the editor simply records the fact that a particular incomplete questionnaire has been dropped from the sample.

Editing Questions Answered out of Order: Another situation an editor may face is the need to rearrange the answers to an open-ended response to a question. For example, a respondent may have provided the answer to a subsequent question in his answer to an earlier open-ended response question. Because the respondent had already clearly identified his answer, the interviewer may have avoided asking the subsequent question. The interviewer may have wanted to avoid hearing "I have already answered that earlier" and to maintain rapport with the respondent and therefore skipped the question. To make the response appear in the same order as on other questionnaires, the editor may remove the out-of-order answer to the section related to the skipped question.

Coding

Coding involves assigning numbers or other symbols to answers so the responses can be grouped into limited number of classes or categories. The classifying of data into limited categories sacrifices some data detail but is necessary for efficient analysis. Nevertheless, it is recommended that try to keep the data in raw form so far it is possible. When the data have been entered into the computer you can always ask the computer to group and regroup the categories. In case the data have been entered in the compute in grouped form, it will not be possible to disaggregate it.

Although codes are generally considered to be numerical symbols, they are more broadly defined as the rules for interpreting, classifying, and recording data. Codes allow data to be processed in a computer. Researchers organize data into fields, records, and files. A **field** is a collection of characters (a character is a single number, letter of the alphabet, or special symbol such as the question mark) that represent a single type of data. A **record** is collection of related fields. A **file** is a collection of related records. File, records, and fields are stored on magnetic tapes, floppy disks, or hard drives.

Researchers use a coding procedure and codebook. A **coding procedure** is a set of rules stating that certain numbers are assigned to variable attributes. For example, a researchers codes males as 1 and females as 2. Each category of variable and missing information needs a code. A **codebook** is a document (i.e. one or more pages) describing the coding procedure and the location of data for variables in a format that computers can use.

When you code data, it is very important to create a well-organized, detailed codebook and make multiple copies of it. If you do not write down the details of the coding procedure, or if you misplace the codebook, you have lost the key to the data and may have to recode the data again.

Researchers begin thinking about a coding procedure and a codebook before they collect data. For example a survey researcher pre-codes a questionnaire before collecting the data. Pre-coding means placing the code categories (e.g. 1 for male, 2 for female) on the questionnaire.

Sometimes to reduce dependence on codebooks, researchers also place the location in the computer format on the questionnaire.

If the researcher does not pre-code, his or her first step after collecting and editing of data is to create a codebook. He or she also gives each case an identification number to keep track of the cases. Next, the researcher transfers the information from each questionnaire into a format that computers can read.

Code Construction

When the question has a fixed-alternative (closed ended) format, the number of categories requiring codes is determined during the questionnaire design stage. The codes 8 and 9 are conventionally given to "don't know" (DK) and "no answer" (NA) respectively. However, many computer program fields recognize a blank field or a certain character symbol, such as a period (.), as indicating a missing value (no answer).

There are two basic rules for code construction. First, the coding categories should be ***exhaustive*** – that is, coding categories should be provided for all subjects or objects or responses. With a categorical variable such as sex, making categories exhaustive is not a problem. However, when the response represents a small number of subjects or when the responses might be categorized in a class not typically found, there may be a problem.

Second, the coding categories should also be ***mutually exclusive*** and ***independent***. This means that there should be no overlap between the categories, to ensure that a subject or response can be placed in only one category. This frequently requires that an "other" code category be included, so that the categories are all inclusive and mutually exclusive. For example, managerial span of control might be coded 1, 2, 3, 4, and "5 or more." The "5 or more" category ensures everyone a place in a category.

When a questionnaire is highly structured, pre-coding of the categories typically occurs before the data are collected. In many cases, such as when researchers are using open-ended response questions, a framework for classifying responses to questions cannot be established before data collection. This situation requires some careful thought concerning the determination of categories after editing process has been completed. This is called post-coding or simply *coding.* The purpose of **coding open-ended response questions** is to reduce the large number of individual responses to a few general categories of answers that can be assigned numerical scores. Code construction in these situations necessarily must reflect the judgment of the researcher. A major objective in code-building process is to accurately transfer the meaning from written answers to numeric codes.

Code Book

A book that identifies each variable in a study and its position in the data matrix is called as code book. The book is used to identify a variable's description, code name, and field. Here is a sample:

Q/V No.	**Field/ col. No.**	**Code values**
--	1-5	Study number
-	6	City
		1 = Lahore

•		2 = Rawalpindi
•		3 = Karachi
•	7 -9	Interview No.
• Sex	10	1 = Male
•		2 = Female
• Age	11-12	Actual
• Education	13	1 = Non literate
		2 = Literate

Production Coding

Transferring the data from the questionnaire or data collection form after the data have been collected is called production coding. Depending upon the nature of the data collection form, codes may be written directly on the instrument or on a special coding sheet.

Data Entries

Use of scanner sheets for data collection may facilitate the entry of the responses directly into the computer without manual keying in the data. In studies involving highly structured paper questionnaires, an **Optical scanning system** may be used to read material directly to the computer's memory into the computer's memory. Optical scanners process the marked-sensed questionnaires and store the answers in a file.

Cleaning Data

The final stage in the coding process is the error checking and verification, or **"data cleaning"** stage, which is a check to make sure that all codes are legitimate. Accuracy is extremely important when coding data. Errors made when coding or entering data into a computer threaten the validity of measures and cause misleading results. A researcher who has perfect sample, perfect measures, and no errors in gathering data, but who makes errors in the coding process or in entering data into a computer, can ruin a whole research project.

Lesson 30: DATA TRANSFROMATION

Data transformation is the process of changing data from their original form to a format that is more suitable to perform a data analysis that will achieve the research objectives. Researchers often modify the values of a scalar data or create new variables. For example many researchers believe that response bias will be less if interviewers ask consumers for their year of birth rather than their age, even though the objective of the data analysis is to investigate respondents' age in years. This does not present a problem for the research analyst, because a simple data transformation is possible. The raw data coded at birth year can be easily transformed to age by subtracting the birth year from the current year.

Collapsing or combining categories of a variable is a common data transformation that reduces the number of categories. For example five categories of Likert scale response categories to a question may be combined like: the "strongly agree" and the "agree" response categories are combined. The "strongly disagree" and the "disagree" response categories are combined into a single category. The result is the collapsing of the five-category scale down to three.

Creating new variables by re-specifying the data numeric or logical transformations is another important data transformation. For example, Likert summated scale reflect the combination of scores (raw data) from various attitudinal statements. The summative score for an attitude scale with three statements is calculated as follows:

Summative Score = Variable 1 + Variable 2 + Variable 3

This calculation can be accomplished by using simple arithmetic or by programming a computer with a data transformation equation that creates the new variable "summative score."

The researchers have created numerous different scales and indexes to measure social phenomenon. For example scales and indexes have been developed to measure the degree of formalization in bureaucratic organization, the prestige of occupations, the adjustment of people in marriage, the intensity of group interaction, the level of social activity in a community, and the level of socio-economic development of a nation.

Keep in mind that every social phenomenon can be measured. Some constructs can be measured directly and produce precise numerical values (e.g. family income). Other constructs require the use of surrogates or proxies that indirectly measure a variable (e.g. job satisfaction). Second, a lot can be learned from measures used by other researchers. We are fortunate to have the work of thousands of researchers to draw on. It is not always necessary to start from a scratch. We can use a past scale or index, or we can modify it for our own purposes. The process of creating measures for a construct evolves over time. Measurement is an ongoing process with constant change; new concepts are developed, theoretical definitions are refined, and scales or indexes that measure old or new constructs are improved.

Indexes and Scales

Scales and indexes are often used interchangeably. One researcher's scale is another's index. Both produce ordinal- or interval- level measures of variable. To add to the confusion, scale and index techniques can be combined in one measure. Scales and indexes give a researcher more information about variables and make it possible to assess the quality of measurement.

Scales and indexes increase reliability and validity, and they aid in **data reduction;** that is condense and simplify the information that is collected.

A **scale** is a measure in which the researcher captures the intensity, direction, level, or potency of a variable construct. It arranges responses or observation on a continuum. A scale can use single indicator or multiple indicators. Most are at the ordinal level of measurement.

An **index** is a measure in which a researcher adds or combines several distinct indicators of a construct into a single score. This composite score is often a simple sum of multiple indicators. It is used for content or convergent validity. Indexes are often measured at the interval or ratio level.

Researchers sometimes combine the features of scales and indexes in a single measure. This is common when a researcher has several indicators that are scales. He or she then adds these indicators together to yield a single score, thereby an index.

Unidimensionality: It means that all the items in a scale or index fit together, or measure a single construct. Unidimensionality says: If you combine several specific pieces of information into a single score or measure, have all the pieces measure the same thing. (each sub dimension is part of the construct's overall content).

For example, we define the construct "feminist ideology" as a general ideology about gender. Feminist ideology is a highly abstract and general construct. It includes a specific beliefs and attitudes towards social, economic, political, family, sexual relations. The ideology's five belief areas parts of a single general construct. The parts are mutually reinforcing and together form a system of beliefs about dignity, strength, and power of women.

Index Construction

You may have heard about a consumer price index (CPI). The CPI, which is a measure of inflation, is created by totaling the cost of buying a list of goods and services (e.g. food, rent, and utilities) and comparing the total to the cost of buying the same list in the previous year. An **index** is combination of items into a single numerical score. Various components or subgroups of a construct are each measured, and then combined into one measure.

There are many types of indexes. For example, if you take an exam with 25 questions, the total number of questions correct is a kind of index. It is a composite measure in which each question measures a small piece of knowledge, and all the questions scored correct or incorrect are totaled to produce a single measure.

One way to demonstrate that indexes are not a very complicated is to use one. Answer yes or no to the seven questions that follow on the characteristics of an occupation. Base your answers on your thoughts regarding the following four occupations: long-distance truck driver, medical doctor, accountant, telephone operator. Score each answer 1 for yes and 0 for no.

1. Does it pay good salary?
2. Is the job secure from layoffs or unemployment?
3. Is the work interesting and challenging?
4. Are its working conditions (e.g. hours, safety, and time on the road) good?
5. Are there opportunities for career advancement and promotion?

6. Is it prestigious or looked up to by others?
7. Does it permit self-direction and the freedom to make decisions?

Total the seven answers for each of the four occupations. Which had the highest and which had the lowest score? The seven questions are our operational definition of the construct good occupation. Each question represents a subpart of our theoretical definition.

Creating indexes is so easy that it is important to be careful that every item in the index has face validity. Items without face validity should be excluded. Each part of the construct should be measured with at least one indicator. Of course, it is better to measure the parts of a construct with multiple indicators.

Another example of an index is college quality index. Our theoretical definition says that a high quality college has six distinguished characteristics: (1) fewer students per faculty member, (2) a highly educated faculty, (3) more books in the library, (4) fewer students dropping out of college, (5) more students who go to advanced degrees, and (6) faculty members who publish books or scholarly articles. We score 100 colleges on each item, and then add the score for each to create an index score of college quality that can be used to compare colleges.

Indexes can be combined with one another. For example, in order to strengthen the college quality index. We add a sub-index on teaching quality. The index contain eight elements: (1) average size of classes, (2) percentage of class time devoted to discussion, (3) number of different classes each faculty member teaches, (4) availability of faculty to students outside the classroom, (5) currency and amount of reading assigned, (6) degree to which assignments promote learning, (7) degree to which faculty get to know each student, and (8) student ratings of instruction. Similar sub-index measures can be created for other parts of the college quality index. They can be combined into a more global measure of college quality. This further elaborates the definition of a construct "quality of college."

Weighting

An important issue in index construction is whether to weight items. Unless it is otherwise stated, assume that an index is un-weighted. Likewise, unless we have a good reason for assigning different weights, use equal weights. A weighted index gives each item equal weight. It involves adding up the items without modification, as if each were multiplied by 1 (or – 1 for negative items that are negative).

Scoring and Score Index

In one our previous discussions we had tried to measure job satisfaction. It was operationalized with the help of dimensions and elements. We had constructed number of statements on each element with 5 response categories using Likert scale i.e. strongly agree, agree, undecided, disagree, and strongly disagree. We could score each of these items from 1 to 5 depending upon the degree of agreement with the statement. The statements have been both positive as well as negative. For positive statements we can score straight away from 5 to 1 i.e. strongly agree to strongly disagree. For the negative statements we have to reverse the score i.e. 1 for "strongly agree," 2 for "agree," 3 for "undecided" to 4 for "disagree," and 5 for "strongly disagree." Reason being that negative multiplied by a negative becomes positive i.e. a negative statement and a person strongly disagreeing with it implies that he or she has a positive responsive so we give a score of 5 in this example. In our example, let us say there were 23

statements measuring for different elements and dimensions measuring job satisfaction. When on each statement the respondent could get a minimum score of 1 and a maximum score of 5, on 23 statements a respondent could get a minimum score of (23 X 1) and a maximum score of (23 X 5) 115. In this way the score index ranges from 23 to 115, the lower end of the score index showing minimum job satisfaction and upper end as the highest job satisfaction. In reality we may not find any on the extremes, rather the respondents could be spread along this continuum. We could use the raw scores of independent and dependent variable and apply appropriate statistics for testing the hypothesis. We could also divide the score index into different categories like high "job satisfaction" and "low satisfaction" for presentation in a table. We cross-classify job satisfaction with some other variable and apply appropriate statistics for testing the hypothesis.

Lesson 31: DATA PRESENTATION

Tables and graphs (pictorial presentation of data) may simplify and clarify the research data. Tabular and graphic representation of data may take a number of forms, ranging from computer printouts to elaborate pictographs. The purpose of each table or graph, however, is to facilitate the summarization and communication of the meaning of the data.

Although there are a number of standardized forms for presenting data in table or graphs, the creative researcher can increase the effectiveness of particular presentation. Bar charts, pie charts, curve diagrams, pictograms, and other graphic forms of presentation create a strong visual impression.

The proliferation of computer technology in business and universities has greatly facilitated tabulation and statistical analysis. Commercial packages eliminate the need to write a new program every time you want to tabulate and analyze data with a computer. SAS, Statistical Package for the Social Sciences (SPSS), SYSTAT, Epi, Info, and MINITAB is commonly used statistical packages. These user friendly packages emphasize sta tistical calculations and hypothesis testing for varied types of data. They also provide programs for entering and editing data. Most of these packages contain sizeable arrays of programs for descriptive analysis and univariate, bivariate, and multivariate statistical analysis.

Results with one variable

Frequency Distribution

Several useful techniques for displaying data are in use. The easiest way to describe the numerical data of one variable is with a frequency distribution. It can be used with nominal-, ordinal-, interval-, or ratio-level data and takes many forms. For example we have data of 400 students. We can summarize the data on the gender of the students at a glance with raw count or a *frequency distribution*

Table 1: Frequency distribution of students

Gender	Frequency	Percent
Male	300	75
Female	100	25
Total	**400**	**100**

We can present the same information in a graphic form. Some common types of graphic presentations are the *histograms, bar chart, and pie chart.* Bar charts or graphs are used for discrete variables. They can have vertical or horizontal orientation with small space between the bars. The terminology is not exact, but histograms are usually upright bar graphs for interval or ratio data.

Presentation of data in these forms lays emphasis on visual representation and graphical techniques over summary statistics. Summary statistics may obscure, conceal, or even

misrepresent the underlying structure of the data. Therefore it is suggested that data analysis should begin with visual inspection.

The presented data has to be interpreted. The purpose of interpretation is to explain the meanings of the data so that we can make inferences and formulate conclusions. Therefore, **interpretation** refers to making inferences pertinent to the meaning and implications of the research investigation and drawing conclusions. In order for interpretation, the data have to be meaningfully analyzed. For purposes of analysis the researchers use statistics.

The word *statistics* has several meanings. It can mean a set of collected numbers (e.g. numbers telling how many people living in a city) as well as a branch of applied mathematics used to manipulate and summarize the features of numbers. Social researchers use both types of statistics. Here, we focus on the second type – ways to manipulate and summarize numbers that represent data from research project.

Descriptive statistics describe numerical data. They can be categorized by the number of variables involved: univariate, bivariate, or multivariate (for one, two, and three or more variables). Univariate statistics describe one variable.

Researchers often want to summarize the information about one variable into a single number. They use three measures of central tendency, or measures of the center of the frequency distribution: mean, median and mode, which are often called averages (a less precise and less clear way to say the same thing). The *mode* is simply the most common or frequently occurring number. The *median* is the middle point. The *mean* also called the arithmetic average, is the most widely used measure of central tendency. A particular central tendency is used depending upon the nature of the data.

Bivariate Tables

The bivariate contingency table is widely used. The table is based on cross-tabulation (cross-classification); that is the cases are organized in the table on the basis of two variables at the same time.

A contingency table is formed by cross-tabulating the two or more variables. It is contingent because the cases in each category of a variable get distributed into each category of a second variable. The table distributes cases into categories of multiple variables at the same time and shows how the cases, by the category of one variable, are "contingent upon" the categories of the other variables.

Constructing Percentage Tables

It is to construct a percentage table, but there are ways to make it look professional. Let us take two variables like the age of the respondents and their attitude towards "women empowerment." Assuming that age affects the attitude towards women empowerment let us hypothesize: the lower the age, the higher the favorable attitude towards "women empowerment." The age range of the respondents is 25 to 70, and the attitude index has three categories of "highly favorable," "medium favorable," and "low favorable." The age variable has so many categories that making a table with that number becomes unwieldy and

meaningless. Therefore, we regroup (recode) the age categories into three i.e. under 40 years, 40 – 60 years, and 61 + years.

Univariate table for age

- Table 2: Age of the respondents

Age (Yrs.)	Frequency	Percent
Under 40	1000	33.3
40 – 60	1000	33.3
61 +	1000	33.3
Total	3000	100

Univariate table for attitude

- Table 3: Attitude towards women empowerment

Attitude	Frequency	Percent
Hi Favorable	1100	37
Med Favorable	1050	35
Lo Favorable	850	28
Total	3000	100

Bivariate table

- Table 4: Age by attitude towards women empowerment

	Age (in years)							
Level of attitude	under 40		40 –60		61 +		Total	
	F.	%	F.	%	F	%	F	%
Hi Favorable	600	60	300	30	200	20	1100	37
Med. Favorable	300	30	500	50	250	25	1050	35
Lo Favorable	100	10	200	20	500	50	850	28
Total	1000	100	1000	100	1000	100	3000	100

Lesson 32: THE PARTS OF THE TABLE

1. Give each table a number.
2. Give each table a title, which names variables and provides background information
3. Label the row and columns variables and give name to each of the variable categories.
4. Include the totals of the columns and rows. These are called *marginal.* They equal the univariate frequency distribution for the variable.
5. Each number or place that corresponds to the intersection of a category for each variable is a *cell of a table.*
6. The numbers with the labeled variable categories and the totals are called the *body of the table.*
7. If there is missing information, report the number of missing cases near the table to account for all original cases.

Researchers convert raw count tables into percentages to see bi-variate relationship. There are three ways to percentage a table: by row, by column, and for the total. The first two are often used and show relationship.

Is it best to percentage by row or column? Either could be appropriate. A researcher's hypothesis may simply looking at row percentages or the column percentages. Here, the hypothesis is that age affects attitude, so column percentages are most helpful. Whenever one factor in a cross-tabulation can be considered the cause of the other, percentage will be most illuminating if they are computed in the direction of the causal factor.

Reading a percentage Table:

Once we understand how table is made, reading it and figuring out what it says are much easier. To read a table, first look at the title, the variable labels, and any background information. Next, look at the direction in which percentages have been computed – in rows or columns.

Researchers read percentage tables to make comparisons. Comparisons are made in the opposite direction from that in which percentages are computed. A rule of thumb is to compare across rows if the table is percentage down (i.e. by column) and to compare up and down in columns if the table is percentage across (i.e. by row).

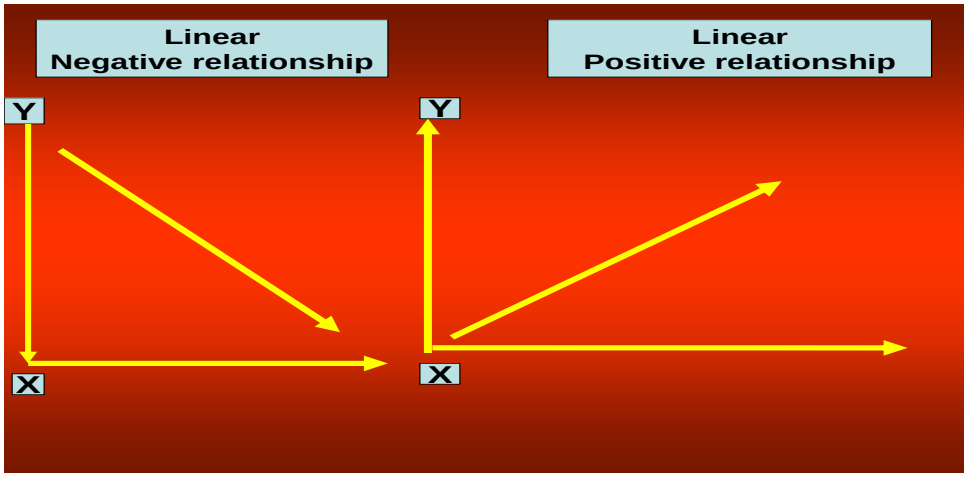
It takes practice to see a relationship in a parentage table. If there is no relationship in a table, the cell percentages look approximately equal across rows or columns. A linear relationship looks like larger percentages in the diagonal cells. If there is curvilinear relationship, the largest percentages form a pattern across cells. For example, the largest cells might be the upper right, the bottom middle, and the upper left. It is easiest to see a relationship in a moderate-sized table (9 to 16 cells) where most cells have some cases (at least five cases are recommended) and the relationship is strong and precise.

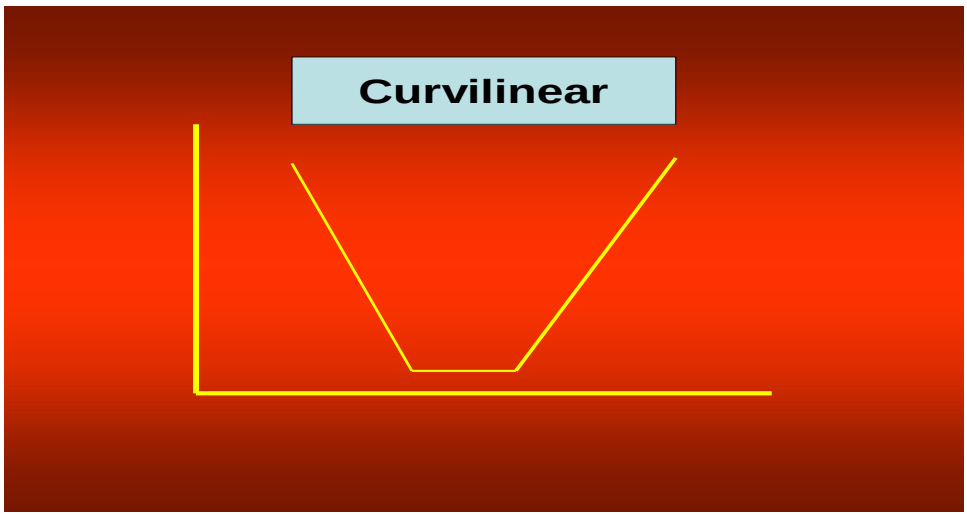
Linear relationship

- Table 4: Age by attitude towards women empowerment

	Age (in years)							
Level of attitude	under 40		40 –60		61 +		Total	
	F.	%	F.	%	F	%	F	%
Hi Favorable	600	60	300	30	200	20	1100	37
Med. Favorable	300	30	500	50	250	25	1050	28
Lo Favorable	100	10	200	20	500	50	850	28
Total	1000	100	1000	100	1000	100	3000	100

- **Larger percentages in the diagonal cells**





A simple way to see strong relationships is to circle the largest percentage in each row (in row percentage tables) or columns (for column-percentage tables) and see if a line appears.

A simple way to see strong relationship is to circle the largest percentage in applicable row or column and see if a line appears

- Table 4: Age by attitude towards women empowerment

Age (in years)

Level of attitude	under 40 F.	%	40 –60 F.	%	61 + F	%	Total F	%
Hi Favorable	600	(60)	300	30	200	20	1100	37
Med. Favorable	300	30	500	(50)	250	25	1050	35
Lo Favorable	100	10	200	20	500	(50)	850	28
Total	1000	100	1000	100	1000	100	3000	100

The circle-the-largest-cell rule works – with one important caveat. The categories in the percentages table must be ordinal or interval. The lowest variable categories begin at the bottom left. If the categories in a table are not ordered the same way, the rule does not work.

Statistical Control

Showing an association or relationship between two variables is not sufficient to say that an independent variable *causes* a dependent variable. In addition to temporal order and association, a researcher must eliminate alternative explanations – explanations that can make the hypothetical relationship spurious. Experimental researchers do this by choosing a research design that physically controls potential alternative explanations for results (i.e. that threaten internal validity).

In non-experimental research, a researcher controls for alternative explanations with statistics. He or she measures possible alternative explanations with *control variables*, and then examines the control variables with multivariate tables and statistics that help him or her to decide whether a bivariate relationship is spurious. They also show the relative size of the effect of multiple independent variables on dependent variable.

A researcher controls for alternative explanation in multivariate (more than two variables) analysis by introducing a third (sometimes fourth or fifth) variable. For example, a bivariate table shows that young people show more favorable attitude towards women empowerment. But the relationship between age and attitude towards women empowerment may be spurious because men and women may have different attitudes. To test whether the relationship is actually due to gender, a researcher must control for gender; in other words, effects of gender are statistically removed. Once this is done, a researcher can see whether the bivariate relationship between age and attitude towards women empowerment remains.

A researcher controls for a third variable by seeing whether the bivariate relationship persists within categories of the control variable. For example controls for gender, and the relationship between age and attitude persists. This means that both male and females show negative association between age and attitude toward women empowerment. In other words, the control variable has no effect. When this is so, the bivariate relationship is not spurious.

If the bivariate relationship weakens or disappears after the control variable is considered, it means that the age is not real factor that makes the difference in attitude towards women empowerment, rather it is the gender of the respondents.

Statistical control is a key idea in advanced statistical techniques. A measure of association like the correlation co-efficient only suggests a relationship. Until a researcher considers control variables, the bivariate relationship could be spurious. Researchers are cautious in interpreting bivariate relationships until they have considered control variables.

After they introduce control variables, researchers talk about the *net effect* of an independent variable – the effect of independent variable "net of," or in spite of, the control variable. There are two ways to introduce control variables: trivariate percentage tables and multiple regression analysis.

Constructing Trivariate Tables

In order to meet all the conditions needed for causality, researchers want to "control for" or see whether an alternative explanation explains away a causal relationship. If an alternative explanation explains a relationship, then bivariate relationship is spurious. Alternative explanations are operationalized as a third variable, which are called *control variables* because they control for alternative explanation.

One way to take such third variables into consideration and see whether they influence the bivariate relationship is to statistically introduce control variables using trivariate or three variable tables. Trivariate tables differ slightly from bivariate tables; they consist of multiple bivariate tables.

A trivariate table has a bivariate table of the independent and dependent variable for each category of the control variable. These new tables are called *partials.* The number of partials depends on the number of categories in control variable. Partial tables look like bivariate tables, but they use a subset of the cases. Only cases with a specific value on the control variable are in the partial. Thus it is possible to break apart a bivariate table to form partials, or combine the partials to restore the initial bivariate table.

Trivariate tables have three limitations. First, they are difficult to interpret if a control variable has more than four categories. Second, control variables can be at any level of measurement, but interval or ratio control variables must be grouped (i.e. converted to an ordinal level), and how cases are grouped can affect the interpretation of effects. Finally, the total number of cases is a limiting factor because the cases are divided among cells in partials. The number of cells in the partials equals the number of cells in the bivariate relationship multiplied by the number of categories in the control variables. For example if the control variable has three categories, and a bivariate table has 12 cells, the partials have 3 X 12 = 36 cells. An average of five cases per cell is recommended, so the researcher will need 5 X 36 = 180 cases at minimum.

Like a bivariate table construction, a trivariate table begins with a compound frequency distribution (CFD), but it is a three-way instead of two-way CFD. An example of a trivariate table with "gender" as control variable for the bivariate table is shown here:

Partial table for males

Level of Attitude	Age (in years) Under 40 F	%	40—60 F	%	61+ F.	%	Total F.	%.
High	300	60	200	33	30	6	530	33
Medium	140	28	270	45	120	24	530	33
Low	60	12	130	22	350	70	540	34
Total	500	100	600	100	500	100	1600	100

Partial table for females

Level of Attitude	Age (in years) Under 40 F	%	40—60 F	%	61+ F.	%	Total F.	% .
High	350	70	200	50	20	4	570	41
Medium	150	30	150	38	220	44	520	37
Low	-	-	50	12	260	52	310	22
Total	500	100	400	100	500	100	1400	100

The replication pattern is the easiest to understand. It is when the partials replicate or reproduce the same relationship that existed in the bivariate table before considering the control variable. It means that the control variable has no effect.

The specification pattern is the next easiest pattern. It occurs when one partial replicate the initial bivariate relationship but other partials do not. For example, we find a strong (negative) bivariate relationship between age of the respondents and attitude towards women empowerment. We control for gender and discover the relationship holds only for males (i.e. the strong negative relationship was in the partial for males, but not for females). This is specification because a researcher can specify the category of the control variable in which the initial relationship persists.

The interpretation pattern describes the situation in which the control variable intervenes between the original independent variable and the dependent variables.

The suppressor variable pattern occurs when the bivariate tables suggest independence but relationship appears in one or both of the partials. For example, the age of the respondents and their attitudes towards women empowerment are independent in a bivariate table. Once the control variable "gender" is introduced, the relationship between the two variables appears in the partial tables. The control variable is suppressor variable because it suppressed the true relationship; the true relationship appears in partials.

Multiple Regression Analysis

Multiple regression controls for many alternative explanations of variables simultaneously (it is rarely possible to use more than one control variable using percentage tables). Multiple regression is a technique whose calculation you may have learnt in the course on statistics.

Note

In the preceding discussion you have been exposed to the descriptive analysis of the data. Certainly there are statistical tests which can be applied to test the hypothesis, which you may have learnt in your course on statistics.

Lesson 33: EXPERIMENTAL RESEARCH

Experimental research builds on the principles of positivist approach more directly than do the other research techniques. Researchers in the natural sciences (e.g. chemistry and physics), related applied fields (e.g. engineering, agriculture, and medicines) and the social sciences conduct experiments. The logic that guides an experiment on plant growth in biology or testing a metal in engineering is applied in experiments on human social behavior. Although it is most widely used in psychology, the experiment is found in education, criminal justice, journalism, marketing, nursing, political science, social work, and sociology.

The purpose of experimental research is to allow the researcher to *control* the research situation so that *causal* relationships among variables may be evaluated. The experimenter, therefore, manipulates a single variable in an investigation and holds constant all other, extraneous variables. (Events may be controlled in an experiment in a way that is not possible in a survey.) The goal of the experimental design is the confidence that it gives the researcher that his experimental treatment is the cause of the effect he measures.
Experiment is a research design in which conditions are controlled so that one or more variables can be manipulated in order to test a hypothesis. Experimentation is a research design that allows evaluation of causal relationship among variables.

Experiments differ from other research methods in terms of degree of control over the research situation. In a typical experiment one variable (the *independent variable*) is manipulated and its effect on another variable (the *dependent variable*) is measured, while all other variables that may confound such relationship are eliminated or controlled. The experimenter either creates an artificial situation or deliberately manipulates a situation.

Once the experimenter manipulates the independent variable, changes in the dependent variable are measured. The essence of a behavioral experiment is to do something to an individual and observe his or her reaction under conditions where this reaction can be measured against a known baseline.
To establish that variable X cause's variable Y, *all three* of the following conditions should be met:

1. Both X and Y should co-vary (i.e. when one goes up, the other should also simultaneously go up (or go down).
2. X (the presumed causal factor) should precede Y. In other words, there must be a time sequence in which the two occur.
3. No other factor should possibly cause the change in the dependent variable Y.

It may thus be seen that to establish causal relationships between two variables in an organizational setting, several variables that might co-vary with the dependent variable have to be controlled. This would then allow us to say that variable X and variable X alone causes the dependent variable Y. Useful as it is to know the cause-and-effect relationships, establishing them is not so easy, because several other variables that co-vary with the dependent variable have to be controlled. It is not always possible to control all the co-variates while manipulating the causal factor (the independent variable that is causing the dependent variable) in organizational settings, where events flow or occur naturally and normally. It is, however, possible to first isolate the effects of a variable in a tightly controlled artificial setting (the lab setting), and after testing and establishing the cause-and-effect relationship under these tightly controlled conditions, see how generalizable such relationships are to the field setting.

The Language of Experiments

Experimental research has its own language or set of terms and concepts. One important term frequently used is *subjects* or *test units*. In experimental research, the cases or people used in research projects and on whom variables are measured are called the *subjects* or *test units*. In other words these are those entities whose responses to the experimental treatment are measured or observed. Individuals, organizational units, sales territories, or other entities may be the test units. Similar terminology is used on different component parts of the experiments.

Parts of Experiments:

We can divide the experiments into seven parts and for each part there is a term. Not all experiments have all these parts, and some have all seven parts plus others. The following seven usually make up a true experiment.

1. Treatment or independent variable.
2. Dependent variable.
3. Pretest.
4. Posttest.
5. Experimental group.
6. Control group.
7. Assignment of subjects.

Treatment or independent variable: The experimenter has some degree of control over the independent variable. The variable is independent because its value can be manipulated by the experimenter to whatever he or she wishes it to be. In experimental design the variable that can be manipulated to be whatever the experiment wishes. Its value may be changed or altered independently of any other variable.

In most experiments, a researcher creates a situation or enters into an ongoing situation, then modifies it. The treatment (or the stimulus or manipulation) is what the researcher modifies. The term comes from medicine, in which a physician administers a treatment to patients; the physician intervenes in a physical or psychological condition to change it. It is the independent variable or the combination of independent variables.
In experiments, for example, the researcher creates a condition or situation. Look at "the degree of fear or anxiety"; the levels are high-fear or low-fear situation. Instead of asking the subjects, as we do in surveys, whether they are fearful, experimenter puts the subjects into either in a high-fear or low-fear situation. They measure the independent variable by manipulating conditions so that some subjects feel a lot of fear and others feel little.

Researchers go to great lengths to create treatments. They want the treatment to have an impact and produce specific reactions, feelings, or behaviors.

It also possible the researchers look at the alternative manipulations of the independent variable being investigated. In business research, the independent variable is often categorical or classificatory variable, representing some classifiable or qualitative aspects of management strategy. To determine the effects of training, for example, the experimental treatment that represents the independent variable is the training program itself.

Dependent Variable: The criterion or standard by which the results are judged. It is assumed that the changes in the dependent variable are consequence of changes in the independent variable. For example, measures of turnover, absenteeism, or morale might be alternative choices for the dependent variable, depending on the purpose of the training.

The outcomes in the experimental research are the physical conditions, social behaviors, attitudes, feelings, or beliefs of subjects that change, in response to treatment. Dependent variables can be measured by paper-and-pencil indicators, observations, interviews, or physiological responses (e.g. heartbeat, or sweating palms).

Selection of dependent variable is crucial decision in the design of an experiment.

Pretests and Posttests: Frequently a researcher measures the dependent variable more than once during an experiment. The *pretest* is the measurement of the dependent variable prior to the introduction of the treatment. The posttest is the measurement of the dependent variable after the treatment has been introduced into the experimental situation.

Experimental and Control Groups: Experimental researchers often divide subjects into two or more groups for purposes of compassion. A simple experiment has only two groups, only one of which receives the treatment. The experimental group is the group that receives the treatment or in which the treatment is present.

The group that does not receive the treatment is called the "control group." When the independent variable takes on many different values, more than one experimental group is used.

In the simplest type of experiment, only two values of the independent variable are manipulated. For example, consider measuring the influence of a change in work situation, such as playing music over an intercom during working hours, on employee productivity. In the experimental condition (the treatment administered to the **experimental group**), music is played during working hours. In the control condition (the treatment administered to the **control group**), the work situation remains the same, without change. By holding conditions constant in the control group, the researcher controls for potential sources of error in the experiment. Productivity, (the dependent variable) in the two groups is compared at the end of the experiment to determine whether playing the music (the independent variable) has any effect.

Several experimental treatment levels can also be used. The music/productivity experiment, with one experimental and one control group, may not tell the researcher everything he or she wishes to know about the music/productivity relationship. If the researcher wished to understand the functional nature of the relationship between music and productivity at several treatment levels, additional experimental groups with music played for only 2 hours, only for 4 hours, and only for 6 hours might be studied. This type of design would allow the experimenter to get a better idea about the impact of music on productivity.

Assignment of Subjects/Test Units: Social researchers frequently want to compare. When making comparisons, the researchers want to compare the cases that do not differ with regard to variables that offer alternative explanations. Therefore the groups should be similar in characteristics in such a way that the change in the dependent variable is presumably the outcome of the manipulation of the independent variable, having no alternative explanations.

Random assignment (Randomization) is a method for assigning the cases (e.g. individuals, organizations) to groups for the purpose of making comparisons. It is a way to divide or sort a collection of cases into two or more groups in order to increase one's confidence that the groups do not differ in a systematic way. It is a mechanical method; the assignment is automatic, and the researcher cannot make assignments on the basis of personal preference or the features of specific cases.

Random assignment is random in statistical/mathematical sense, not in everyday sense. In everyday speech, random means unplanned, haphazard, or accidental, but it has a special meaning in mathematics. In probability theory, random describes a process in which each case has a known chance of being selected. Random selection allows the researcher calculate the odds that a specific case will be sorted into one group or the other. A random process is the one in which all cases have an exactly equal chance of ending up in one or the other group.

Random assignment or randomization is unbiased because a researcher's desire to confirm a hypothesis or a research subject's personal interests does not enter into the selection process. It also assures the researcher that repetitions of an experiment – under the controlled conditions – will show true effects, if they exist. Random assignment of subjects allows the researcher to assume that the groups are identical with respect to all variables except for experimental treatment.

Random assignment of subjects to the various experimental groups is the most common technique used to prevent test units from differing from each other on key variables; it assumes that all the characteristics of these subjects have been similarly randomized. If the experimenter believes that certain extraneous variable may affect the dependent variable, he or she may make sure that the subjects in each group are matched on these characteristics. **Matching** the subjects on the basis of pertinent background information is another technique for controlling assignment errors.

Matching presents a problem: What are the relevant characteristics to match on, and can one locate exact matches? Individual cases differ in thousands of ways, and the researcher cannot know which might be relevant.

Three Types of Controls

1. **Manipulation of the Independent Variable:** In order to examine the causal effects of an independent variable on a dependent variable, certain manipulations need to be tried. Manipulation simply means control over the stimulus that is we create different levels of the independent variable to assess the impact on the dependent variable. Let us say we want to test the effects of lighting on worker production levels among sewing machine operators. To establish cause and effect relationship, we must measure the production levels of all the operators over a 15 day period with the usual amount of light they work with – say 60 watt bulbs. We might then want to split the group of 60 operators into three groups of 20 members each, and while allowing the subgroup to continue to work under the same conditions as before (60-watt electric light bulbs). We might want to manipulate the intensity of the light for the other two subgroups, by making one group work with 75 watt and the other with 100 watt light bulbs. After the different groups have worked with these varying degrees of light exposure for15 days,

each group's total production for these 15 days may be analyzed to see the difference between the pre-experimental and the post experimental productions among the groups is directly related to the intensity of the light to which they have been exposed. If our hypothesis that better lighting increases the production levels is correct, the subgroups that did not have any change in the lighting (control group), should have no increase in production and the other two groups should show increases, with the one having the most light (100 watts) showing greater increases than those who had the 75 watt lighting.

In this case the independent variable, lighting, has been manipulated by exposing different groups to different degrees of changes in it. This manipulation of the independent variable is also known treatment, and the results of the treatment are called treatment effects.

2. **Holding Conditions Constant:** When we postulate cause-and-effect relationships between two variables X and Y, it is possible that some other factor, say A, might also influence the dependent variable Y. In such a case, it will not be possible to determine the extent to which Y occurred only because of X, since we do not know how much of the total variation was caused by the presence of the other factor A. If the true effect of the X is to be assessed, then the effect of A has to be controlled. This is also called as controlling the effect of contaminating factors or confounding factors.

3. **Control over the Composition of Groups:** If the experimental and control groups have such characteristics that could contaminate the results then the researcher may have to take note of such factors, if there are any. The group differences should not confound the effect of X variable that happens to be under study. The experimental and control groups need to be balanced. For this purpose the researcher may use **random selection** of the subjects and allocating to different groups. Finally the experimental and control groups should also be selected randomly. Another way to have identical groups is by following the procedure of **matching**. One could look at the possible characteristics of the subjects that could contaminate the effect of X variable, and try to distribute these evenly in all the groups. So pick up one subject and try to match it with another subject on the specified characteristics (age, gender, education, marital status) and put one subject in one group and the other in the other group. After the formation of groups, the researcher may randomly decide about experimental and control groups.

Random Assignment

Social researchers frequently want to compare. For example, a researcher has two groups of 15 students and wants to compare the groups on the basis of key differences between them (e.g. a course that one group completed). Or a researcher has five groups of customers and wants to compare the groups on the basis of one characteristic (e.g. geographic location). "Compare apples with apples, don't compare apples with oranges." It means that a valid comparison depends on comparing things that are fundamentally alike. Random assignment facilitates comparison in experiments by creating similar groups.

Random assignment is a method for assignment cases (e.g. individuals, organizations) to groups for the purpose of making comparisons. It is a way to divide or sort a collection of cases into two or more groups in order to increase one's confidence that the groups do not differ in a systematic way. It is mechanical method; the assignment is automatic, and the

researcher cannot make assignments on the basis of personal preference or the features of specific cases.

Random assignment is random in a statistical or mathematical sense, not in an everyday sense. In everyday speech, random means unplanned, haphazard, or accidental, but it has a specialized meaning in mathematics. In probability theory, *random* describes a process in which each case has a known chance of being selected. Random assignment lets a researcher calculate the odds that a specific case will be sorted into one group over another.

Random assignment or randomization is unbiased because a researcher's desire to confirm a hypothesis or a research subject's personal interest does not enter into selection process.

Matching

It implies to match the characteristics (such as age, sex) of the cases in each group. Matching is an alternative to random assignment, but it is an infrequently used one.
Matching presents a problem: What are the relevant characteristics to match on, and can one locate exact matches. Individual cases differ in thousands of ways, and the researcher cannot know which might be relevant. Therefore, randomization is preferred over matching. It takes care of the contaminating factors.

Lesson 34: EXPERIMENTAL RESEARCH (Cont.)

Steps in Conducting an Experiment

Following the basic steps of the research process, experimenters decide on a topic, narrow it into a testable research problem or question, and then develop a hypothesis with variables. Once a researcher has the hypothesis, the steps of experimental research are clear. Broadly there are about 12 steps in conducting an experiment, which are as below:

1. Begin with a straightforward hypothesis that is appropriate for experimental research.
2. Decide on an experimental design that will test the hypothesis within practical limitations. The researcher decides the number of groups to use, how and when to create treatment conditions, the number of times to measure the dependent variable, and what the groups of subjects will experience from beginning till end.
3. Decide how to introduce the treatment or create a situation that induces the independent variable.
4. Develop a valid and reliable measure of the dependent variable.
5. Set up an experimental setting and conduct a pilot test of the treatment and dependent variable measures.
6. Locate appropriate subjects or cases.
7. Randomly assign subjects to groups (if random assignment is used in the chosen research design) and give careful instructions.
8. Gather data for the pretest measure of the dependent variable for all groups (if pretest is used in the chosen design).
9. Introduce the treatment to the experimental group only (or to the relevant groups if there are multiple experimental groups) and monitor all groups.
10. Gather data for posttest measure of the dependent variable.
11. Debrief the subjects by informing them of the true purpose and reasons for the experiment. Ask subjects what they thought was occurring. Debriefing is crucial when subjects have been deceived about some aspect of the treatment.
12. Examine data collected and make comparisons between different groups. Where appropriate, use statistics and graphs to determine whether or not the hypothesis is supported.

Types of Designs

Researchers combine parts of experiment (e.g. pretests, control groups, etc.) together into an experimental design. For example some designs lack pretests, some do not have control groups, and others have many experimental groups. Certain designs that widely used as standard designs have names.

Classical Experimental Design: All designs are variations of the classical experimental design, which has random assignment of subjects, a pretest and a posttest, an experimental group, and a control group.

Quasi-Experimental Designs:

One-shot Case Study Design: Also called the one-group posttest-only design, the one-shot case study design has only one group, a treatment, and a posttest. Because it is only one group, there is no random assignment. For example, a researcher shows a group of students a horror film, and then measures their attitude with a questionnaire. A weakness of this design is that it is difficult to say for sure that the treatment caused the dependent variable. If subjects were the same before and after the treatment, the researcher would not know it.

***One Group Pretest-posttest Design*:** This design has one group, a pretest, a treatment, and a posttest. It lacks a control group and random assignment. Continuing with the previous example, the researcher gives a group of students an attitude questionnaire to complete, shows a horror film, then has them complete the same questionnaire second time. This is an improvement over the one-shot case study because the researcher measures the dependent variable both before and after the treatment. But it lacks the control group for comparison. The researcher cannot know whether something other than the treatment occurred between the pretest and the posttest to cause the outcome.

Two Groups Posttest-only Design: It has two groups, a random assignment of subjects, a posttest, and a treatment. It has all parts of the classical design except a pretest. Continuing with our previous example, the researcher forms two groups through randomization process. He shows group a horror film to one group i.e. the experimental group. The other group is not shown any film. Both groups then complete the questionnaire. The random assignment reduces the chance that the groups differed before the treatment, but without a pretest, a researcher cannot be as certain that the groups began the same on the dependent variable.

True Experimental Designs

Experimental designs, which have at least two groups, a random assignment of subjects to experimental and control groups, only experimental group is exposed to treatment, both groups record information before and after the treatment, are known as ex-post facto experimental designs.

Pretest and Posttest Experimental and Control Group Design: Two groups, one control group and the other experimental group, are formed randomly. Both the groups are exposed to pretest and posttest. The experimental group is exposed to treatment while the control group is not. Measuring the difference between the differences in the post- and pretests of the two groups would give the net effects of the treatment.

Experimental Group: Pretest (O1) X Posttest (O2)
Control Group: Pretest (O3) - Posttest (O4)

Randomization used for setting up the group.

[(O2 – O1) – (O4 – O3)] = Treatment effect (could be anywhere between 0 to -1 or +1).

Solomon's Four Group Design

To gain more confidence in internal validity in experimental designs, it is advisable to set up two experimental groups and two control groups. One experimental group and one control

group can be given the both pretest and the posttest. The other two groups will be given only the posttest. Here the effects of treatment can be calculated in several different ways as shown in figure 1:

Figure 1: Solomon's four group design

Group	Pretest	Treatment	Posttest
1. Experimental	O1	X	O2
2. Control	O3	-	O4
3. Experimental	-	X	O5
4. Control	-	-	O6

(O2 – O1) = E
(O4 - O3) = E
(O5 – O6) = E
(O5 - O3) = E
[(O2 –O1) – (O4 – O3)] = E
E = Effect

If all Es are similar, the cause and effect relationship is highly valid.

Interaction Effect

The effect of two variables together is likely to be greater than the individual effect of each put together. The idea of an interaction effect is familiar, especially in the area of medicine or illness. As an example, imagine that for a given population of 100 persons, all of the same age and sex, it was found that if all 100 smoked cigarettes the effect would be a lung cancer rate of 20 percent. Assume that for an identical group of 100 persons who did not smoke but lived in a smoggy environment, 10 percent would get lung cancer. Now consider a third identical group of 100 persons all of whom smoke and also live in a smoggy environment. The additive effect of both smoking and smog would be 20 percent plus 10 percent, or a total of 30 percent (30 people) having cancer. However, imagine that an actual medical survey of the population shows a cancer rate of 37 percent among persons experiencing both smoking and smog. This extra 7 percent can be computed residually as:

Interaction Effect = Total effect – (smoking effect + smog effect) = 37 percent
= 37 percent - (20 percent + 10 percent)
= 37 percent - 30 percent
= 7 percent

In experiments we have the pretests and posttests, in which case we use the same instrument for measuring the dependent variable, for example racial prejudice as an effect of a movie. In pretest is a questionnaire in which items forming the prejudice scale are dispersed at random among other items so that the subject does not know that his or her level of racial prejudice is being measured. Nevertheless, the measurement of this variable (prejudice) itself, by presenting questions about race relations may stimulate the subject's thinking and actually cause a change in his or her level of racial prejudice. Any pretest effect that occurs will be visible as part of extraneous change (change caused by the test stimulus) in the control group, as the pretest is also presented to the control group. Any change between the pretest and posttest for measuring the dependent variable in the control group may be attributed to the sensitization of the subjects with the instrument. In the experimental group of course a movie (an X variable) was shown due to which we expect a change in the racial prejudice of the

subjects. But that is not all. The subjects in the experimental group were also exposed to the instrument for measuring the racial prejudice, hence they were also sensitized. Their posttest results include the combined effect of exposure to a movie and that of sensitization to the instrument. In other words the racial prejudice of the subjects in the experimental group exhibits the interaction effect of the treatment plus that of sensitization of the instrument.
In order to calculate the interaction effect in the experiment we shall have two experimental groups and one control group created by using the randomization process. It may look like this:

Experimental group 1: Pretest (O1) X Posttest (O2)
Control group: Pretest (O3) - Posttest (O4)
Why O4 be different from O3? The difference may be due to sensitization. So let us figure it out. Let us take another experimental group and we do not pretest i.e. no sensitization with the instrument.

Experimental group 2: No pretest X Posttest (O5)

Let us work out the results:

(O2- O1) = D
(O4- O3) = D/
(O5 – O3)= D// (Since all groups are identical, so we can use the pretest of any of the Other two groups)
Interaction effect = D – [D/ + D//]. Substituting it with our example of lung cancer →
37 - [10 + 20] = 37 – 30 = 7

There are many other experimental designs like the randomized block design, Latin square design, natural group design, and factorial design.

Lesson 35: EXPERIMENTAL RESEARCH (Cont.)

Validity in Experiments

Experiments are judged by two measures. The first, internal validity indicates whether the independent variable was the sole cause of the change in the dependent variable. It implies the researcher's ability to eliminate alternative explanations of the dependent variable. Variables, other than the treatment, that affect the dependent variable are threats to internal validity. They threaten the researcher's ability to say that the treatment was the true causal factor producing change in the dependent variable. The second measure, external validity, indicates the extent to which the results of the experiment are applicable in the real world.

Internal validity is high in the laboratory experiment, reason being the control over all the confounding factors. External validity (generalisability) is not sure because of the effect of variety of factors. Field experiments have more external validity but less internal validity because it is closer to the real situations.

Factors Affecting Internal Validity

In choosing or evaluating experimental research design, researchers must determine whether they have internal and external validity. There are eight major types of extraneous variables that may jeopardize internal validity: History effect, maturation effect, testing effect, instrumentation effect, selection bias effect, statistical regression, mortality, and mechanical loss.

1. History Effect:

A specific event in the external environment occurring between the first and second measurement that is beyond the control of the experimenter and that affects the validity of an experiment. Advertisement of a particular product (mineral water) and its sale is affected by an event in the society (contamination of drinking water). The researcher does not have control on such happenings which have an impact on the X and Y relationship.

2. Maturation Effect:

Cause and effect relationship can also be contaminated by the effects of the passage of time – another uncontrollable variable. Such contamination is called maturation effect. The maturation effects are a function of the processes – biological and psychological – operating within the subjects as a result of the passage of time. Examples of maturation processes could include *growing older, getting tired, feeling hungry, and getting bored*. In other words there could be maturation effect on the dependent variable purely because of the passage of time. For example, let us say that an R & D director intends that an increase in the efficiency of workers would result within three months' time if advanced technology is introduced in the work setting. If at the end of three months increased efficiency is indeed found, it will be difficult to claim that the advanced technology (and it alone) increased the efficiency of workers, because with the passage of time, employees would also gained experience, resulting in better performance and therefore improved efficiency. Thus, the internal validity also gets reduced owing to the effects of maturation in as much as it is difficult to pinpoint how much of the increase is attributable to the introduction of the enhanced technology alone.

3. Testing Effects:

Frequently, to test the effects of treatment, subjects are given what is called a ***pretest*** (say**,** a short questionnaire eliciting their feelings and attitudes). That is, a measure of the dependent variable is taken (pretest), then the treatment given, and after that a second test, called ***posttest***, administered. The difference between the posttest and the pretest scores is then attributed to the treatment. However, the very fact that the subjects were exposed to the pretest might influence their responses on the posttest, which will adversely impact on internal validity. It is also called sensitization through previous testing.

4. Instrumentation Effects:

Instrumentation effects are yet another source of threat to internal validity. These might arise because of a change in the measuring instrument between pretest and posttest, and not because of the instrument's differential impact at the end. For example, in a weight-loss experiment, the springs on the scale weaken during the experiment, giving lower readings in the posttest.

A change in the wording of questions (may be done to avoid testing effects), change in interviewers, or change in other procedures to measure the dependent variable can cause instrumentation effect.
Performance of the subjects measured by the units of output in the pretest, but when measuring the output in posttest the researcher measures it by "the number of units rejected, and the amount of resources expended to produce the units.

5. Selection Bias Effect:

Selection bias is the threat that subjects will not form equivalent groups. It is a problem in design without random assignment, hence differential selection of the subjects for the comparison groups. It occurs when subjects in one experimental group have a characteristic that affects the dependent variable. For example, in an experiment on physical aggressiveness, the experimental group unintentionally contains subjects who are sportsmen, whereas the control group is made up of musicians, chess players, and painters.

6. Statistical Regression:

Statistical regression is not easy to grasp intuitively. It is a problem of extreme values or a tendency for random error to move group results towards the average. If extremes are taken then they tend to regress toward the mean. Those who are on either end of the extreme would not truly reflect the cause and effect relationship.

One situation arises when subjects are unusual with regard to dependent variable. Because they begin as unusual or extreme, subjects are likely to respond further in the same direction. For example, a researcher wants to see whether violent films make people act violently. The researcher chooses a group of violent criminals from a high security prison, gives them a pretest, shows violent films, and then administers a posttest. To the researcher's surprise, the criminals are slightly less violent after the film, whereas a control group of non-prisoners who did see the film are slightly more violent than before. Because the violent criminals began at an extreme, it is unlikely that a treatment could make them more violent; by random chance alone, they appear less extreme when measured a second time.

If participants chosen for experimental group have extreme scores on the dependent variable to begin with then the laws of probability say that those with very low scores on a variable have a greater probability to improve and scoring closer to mean on the posttest after treatment. This phenomenon of low scorers tending to score closer to the mean is known as "regressing toward the mean."

Likewise, those with high scores have a greater tendency to regress toward the mean – will score lower on the posttest than on pretest. Thus the extremes will not "truly" reflect the causal relationship – a threat to internal validity.

7. Mortality:

Mortality, or attrition, arises when some subjects do not continue throughout the experiment. Although the word mortality means death, it does not necessarily mean that subjects have died. If a subset of subjects leaves partway through an experiment, a researcher cannot whether the results would have been different had the subjects stayed. Even with departure of few subjects, the groups do not remain balanced.

Consider for example of a training experiment that investigates the effects of close supervision of salespersons (high pressure) versus low supervision (low supervision). The high pressure condition may misleadingly appear to be superior if those subjects who completed the experiment did very well. If, however, the high-pressure condition caused more subjects to drop-out than the other condition, this apparent superiority may be due to a self-selection bias (those who could not bear the pressure had left – mortality) – perhaps only very determined and/or talented salespersons made it through the end of the experiment.

8. Mechanical Loss:

A problem may be experienced due to equipment failure. For example, in an experiment if the subjects are told that their behavior is being videotaped, and during the experiment the video equipment failed to work for some subjects, then the validity of the results could become doubtful.

9. Experimenter Expectancy:

In addition to the usually listed eight factors affecting the internal validity sometimes **experimenter expectancy** may threaten the causal logic of the relationship between the variables. A researcher may threaten internal validity, not purposefully unethical behavior but by indirectly communicating experimenter expectancy to the subjects. Researchers may highly committed to the hypothesis and indirectly communicate desired findings to subjects. For example, a researcher studying reactions towards disabled deeply believes that females are more sensitive toward the disabled than the males are. Through eye contact, tone of voice, pauses, and other nonverbal communication, the researcher unconsciously encourages female subjects to report positive feelings toward the disabled; the researcher's nonverbal behavior is the opposite for male subjects.

The ***double-blind experiment*** is designed to control experimenter expectancy. In it, people who have direct contact with subjects do not know the details of the hypothesis or the treatment. It is ***double*** blind because both the subjects and those in contact with them are blind

to details of the experiment. For example a researcher wants to see if new drug is effective. Using capsules of three colors – green, yellow, and pink -- the researcher puts the new drug in the yellow capsule, puts an old drug in the pink one, and take the green capsule a ***placebo*** – a false treatment that appears to be real (e.g., a sugar capsule without any physical effects). Assistants who give the capsules and record the effects do not know which color contains the new drug. Only another person who does not deal with subjects directly knows which colored capsule contains the drug and examines the results.

External Validity

Even if the researcher eliminates all concerns for internal validity, external validity remains a potential problem. External validity is the ability to generalize experimental findings to real life situations. Without external validity, the findings are of little use for both basic and applied research i.e. we shall not be able to develop any theories that could be applicable to similar other situations.

Reactivity: A Threat to External Validity

Subjects may react differently in an experiment than they would in real life; because they know they are in a study. *The Hawthorn Effect,* a specific kind of reactivity to the experimental situation is a good example in this respect. The experiment was conducted in the Hawthorn Electric Company where the performance of the participants was supposed to change due to the change in the environmental conditions i.e. improvement on the environmental conditions will have a positive effect on the performance. The researchers modified many aspects of the working conditions and measured productivity. Productivity rose after each modification. Productivity rose even if there was no real modification but it was announced that there is a modification. The behavior change was simply a reaction to the announcement of modification and some other factors like the participants were being watched and had a feeling of being 'very important persons.'

Here the workers did not respond to treatment (modification of working conditions) but to the additional attention they received (being in the experiment ad being the focus of attention).

Demand characteristic (discussed earlier) is another type of reactivity. Here the participants change their behavior as a reaction to the demands of the experimenter who may have inadvertently told the subjects about the expected outcome of the treatment. They change their behavior as demanded by the experimenter.

Ethical Issues in Lab Experiments

We have already discussed the ethical issues in research. Just for the sake of emphasis, it may be appropriate to very briefly repeat some of those which are specifically relevant to experimental designs. The following actions may be unethical:

- Putting pressure on individuals to participate in experiments through coercion, or apply social pressure.
- Asking demeaning questions from the subjects that hurt their self-respect or giving menial task to subjects that diminish their self-respect.
- Deceiving subjects by deliberately misleading them as to the true purpose of research.
- Exposing participants to physical or mental stress.

- Not allowing subjects to withdraw from the experiment when they want to.
- Using research results to disadvantage the participants, or for purposes not to their liking.
- Not explaining the procedures to be followed in the experiment.
- Exposing subjects to hazardous and unsafe environments.
- Not debriefing the participants fully and accurately after the experiment is over.
- Not preserving the privacy and confidentiality of the information given by the participants.
- Withholding benefits from the control group.

Human Subjects Committee

In order to protect the rights of participating subjects the research institutions have usually set up Ethics Committees. Sometime project specific ethics committees are also formed. Such committees try to look after the rights of the subjects participating in the experiments, as well as in other research techniques.

Lesson 36: NON-REACTIVE RESEARCH

Experiments and surveys research are both ***reactive***; that is, the people being studied are aware of the fact that they are being studied. In ***non-reactive*** research, those being studied are not aware that they are part of a research project. Such a research is largely based on positivistic principles but is also used by interpretive and critical researchers.

The Logic of Non-Reactive Research

The critical thing about non-reactive or *unobtrusive measures* (i.e. the measures that are not obtrusive or intrusive) is that the people being studied are not aware of it but leave evidence of their social behavior or actions 'naturally." The researcher infers from the evidence to behavior or attitudes without disrupting those being studied. Unnoticed observation is also a type of non-reactive measure. For example, a researcher may be observing the behavior of drivers from a distance whether drivers stopped at red sign of the traffic lights. The observations can be made both at the day time and at night. It could also be noted whether the driver was a male or a female; whether the driver was also or with passengers; whether other traffic was present; and whether the car came to a complete stop, a slow stop, or no stop.

Varieties of Non-Reactive Observations

Non-reactive measures are varied, and researchers have been creative in inventing indirect ways to measures behaviors. Because the measures have little in common except being non-reactive, they are best learned through examples like:

Physical Traces:

- *Erosion*: Wear and tear suggests a greater use. For example, a researcher examines children's toys at a children's play Centre that were purchased at the same time. Worn out toys suggest greater interest of children in them.
- *Accretion:* Accumulation of physical evidence suggests behavior. A researcher examines the soft drink cans or bottles in the garbage collection. That might indicate the brands and types of soft drinks that are very popular.

Archives:

- *Running Records:* Regularly produced public records may reveal lot of information. For example, a researcher may examine marriage records for brides' and grooms' recorded ages. The differences might indicate that males marrying younger females are greater than the other way around.
- *Other Records:* Irregular or private records can reveal a lot. For example, a researcher may look into the number of reams of paper purchased by a college principal's office for the last 10 years and compare it with students' enrollment.

Observations:

- *External Appearance:* How people appear may indicate social factors. For example, a researcher watches students to see whether they are more likely to wear their college's colors and symbols after the college team won or lost.
- *Count Behaviors:* Counting how many people do something can be informative. For example a researcher may count the number of men and women who come to a full stop and those who come to a rolling stop at a traffic stop sign. This suggests gender difference in driving behavior.

- *Time Duration:* How long people take to do things may indicate their intention. For example a researcher may measure how long men and women pause in front of a particular painting. Time taken may indicate their interest in the painting.

Recording and Documentation

- Creating non-reactive measures follows the logic of quantitative measurement, although qualitative researchers also use non-reactive observations. A researcher first conceptualizes a construct, and then links the construct to non-reactive empirical evidence, which is its measure. The operational definition of the variable includes how the researcher systematically notes and records observations.

Content Analysis

Content analysis is a technique for gathering and analyzing the content of a text. The *content* refers to words, meanings, pictures, symbols, ideas, themes, or any message that can be communicated. The *text* is anything written, visual, or spoken that serves as a medium of communication. ***Possible artifacts for study*** could be books, newspaper or magazine articles, advertisements, poems, letters, laws, constitutions, dramas, speeches, official documents, films or videotapes, musical lyrics, photographs, articles of clothing, or works of arts. All these works may be called as documents. The documents can be:

- Personal – letters, diary, autobiography.
- Non-personal – interoffice memos, official documents, proceedings of a meeting.
- Mass media – newspapers, magazines, fiction, films, songs, poems, works of arts.

Content analysis goes back nearly a century and is used in many fields – literature, history, journalism, political science, education, psychology, sociology, and so on. It is also called a study of communication, which means who says what, to whom, why, how, and with what effect.

In content analysis, the researcher uses objective and systematic counting and recording procedures to produce a quantitative description of the symbolic content in a text. It may also be called **"textual coding."** There are qualitative versions of content analysis. The emphasis here is quantitative data about a text's content.

Content Analysis is Non-Reactive: It is non-reactive because the placing of words, messages, or symbols in a text to communicate to the reader or receiver occurs without influence from the researcher who analyzes its contents. There is no interaction between the researcher and the creator of the text under analysis.

Content analysis lets a researcher reveal the contents (i.e. messages, meanings, symbols, etc.) in a source of communication (i.e. a book, article, movie, etc.). It lets him/her probe into and discover content in a different way from ordinary way of reading a book or watching a television program.

With content analysis, a researcher can compare content across many texts and analyze it with quantitative techniques (table, charts). In addition, he or she can reveal aspects of the text's content that are difficult to see. For example, you might watch television commercials and feel that women are mostly portrayed working in the house, cooking food, using detergents, looking after children. Content analysis can document – in objective, quantitative terms – whether or

not your vague feelings based on unsystematic observation are true. It yields repeatable, precise results about the text.

Content analysis involves random sampling, precise measurement, and operational definitions for abstract constructs. Coding turns aspects of content that represent variables into numbers. After a content analysis researcher gathers the data, he or she enters them into computers and analyzes them with statistics in the same way that an experiment or survey researcher would.

Measurement and Coding

Careful measurement is crucial in content analysis because a researcher takes different and murky symbolic communication and turns it into precise, objective, quantitative data. He or she carefully designs and documents the procedures for coding to make replication possible. For example, a researcher wants to determine how frequently television dramas portray elderly characters in terms of negative stereotypes. He or she develops a measure of the construct "negatively stereotypes of the elderly." The conceptualization may result in a list of stereotypes or negative generalizations about older people (e.g., senile, forgetful, frail, hard of hearing, slow, ill, inactive, conservative, etc.) that do not accurately reflect the elderly. Another example could be negative stereotypes about women.

Constructs in content analysis are operationalized with a *coding system*, a set of instructions or rules on how to systematically observe and record content from text. Look at the construct of "leadership role;" for measuring this construct written rules should be provided telling how to classify people. Same is about the concept of "social class." In case the researcher has three categories of upper, middle, and lower class then the researcher must tell what are the characteristics that are associated with upper class, middle class, and the lower class so that the coders could easily classify people in the three proposed categories.

Observations can be structured: Measurement in content analysis uses *structured observation* i.e. systematic, careful observation based on written rules. The rules explain how to categorize and classify observations in terms of:

- *Frequency*: Frequency simply means counting whether or not something occurs and how often (how many times). For example how many elderly people appear on a television program within a given week? What percentage of all characteristics are they, or in what percentage of programs do they appear.
- *Direction:* Direction is noting the direction of messages in the content along some continuum (e.g., positive or negative, supporting or opposed). For example the researcher devises a list of ways an elderly television character can act. Some are positive (e.g., friendly, wise, considerate) and some are negative (e.g., nasty, dull, selfish).
- *Intensity:* Intensity is the strength or power of a message in a direction. For example, the characteristic of forgetfulness can be minor (e.g. not remembering to take the keys when leaving home, taking time to recall the name of someone whom you have not seen in years) or major (e.g., not remembering your name, not recognizing your children.
- *Space:* A researcher can record the size of the text message or the amount of space or volume allocated to it. Space in written text is measured by counting words, sentences, paragraphs, or space on a page (e.g. square inches). For video or audio text, space can be measured by the amount of time allocated. For example, a TV character

may be present for a few seconds or continuously in every seen of a two hour program.

The unit analysis can vary a great deal in content analysis. It can be a word, a phrase, a theme, a plot, a newspaper article, a character, and so forth.

Coding

The process of identifying and classifying each item and giving labels to each category. Later on each category may be assigned a numerical value for its entry into the computer. In content analysis one can look at the manifest coding and latent coding.

Manifest Coding: Coding the visible, surface content in a text is called manifest coding. For example, a researcher counts the number of times a phrase or word (e.g. red) appears in the written text, or whether a specific action (e.g. shaking hands) appears in a photograph or video scene. The coding system lists terms or actions or characters that are then located in text. A researcher can use a computer program to search for words or phrases in the text and have a computer do the counting work.

Manifest coding is highly reliable because the phrase or the word either is or is not present. However, manifest coding does not take the connotation of word into account. The same word can take on different meanings depending on the context. The possibility that there are multiple meanings of a word limits the measurement validity of manifest coding.

Latent Coding: A researcher using *latent coding* (also called *semantic analysis*) looks for the underlying meaning in the content of a text. For example, the researcher reads the entire paragraph and decides whether it contains vulgar themes or a romantic mood. His or her coding system has general rules to guide his or her interpretation of the text and for determining whether particular themes or mood are present.

Latent coding tends to be less reliable than the manifest coding. It depends on a coder's knowledge of language and its social meaning. Training, practice, and written rules improve reliability, but still it is difficult to consistently identify themes, moods, and the like.

Keeping in view the amount of work, often a number of coders are hired. The researcher trains the coders in coding system. Coders should understand the variables, follow the coding system, and ask about ambiguities. A researcher who uses several coders must always check for consistency across coders. He or she does this by asking coders to code the same text independently and then checking for consistency across coders. The researcher measures inter-coder reliability, a type of equivalence reliability, with a statistical coefficient that tells the degree of consistency across among coders. The coefficient is always reported with the results of content analysis research.

How to Conduct Content Analysis Research

Question Formulation: As in most research, content analysis researchers begin with a research question. When the question involves variables that are messages or symbols, content analysis may be appropriate. For example, how women are portrayed in advertisements? The construct here is the portrayal of women which may be measured by looking at the activities

they are shown to be doing, the occupations in which they are employed, the way decision making is taking place, etc.

Unit of Analysis: A researcher decides on the unit of analysis (i.e. the amount of text that is assigned a code). In the previous example each advertisement may be a unit of analysis.

Sampling: Researchers often use random sampling in content analysis. First, they define the population and the sampling element. For example, the population might be all words, all sentences, all paragraphs, or all articles in certain type of documents over a period of specified period. Likewise, it could include each conversation, situation, scene, or episode of a certain type of television program over a specified time period. Let us consider that we want to know how women are portrayed in weekly news magazines. The unit of analysis is the article. The population includes all articles published in weekly news magazines during 2001 to 2007. Make a list of English magazines that were published during the said period. Define what is a news magazine? Define what is an article? Decide on the number of magazines. Decide on the sample size. Make a sampling frame. Here the sampling frame shall be all the articles published in the selected magazines during 2001 to 2007. Finally draw the random sample using table of random numbers.

Variables and Constructing Coding Categories: Say a researcher is interested in women's portrayal in significant leadership roles. Define "significant leadership role" in operational terms and put it as written rules for classifying people named in the articles. Say the researcher is further interested in positive leadership roles, so the measure will indicate whether the role was positive or negative. Researcher has to make a list of adjectives and phrases reflective of the leadership role being positive or negative. If someone in the article is referred to with one of the adjective, then the direction is decided. For example, the terms *brilliant* and *top performer* are positive, whereas *drug kingpin* and *uninspired* are negative. Researcher should give written rules to classify role of women as portrayed in the articles.

In addition to written rules for coding decisions, a content analysis researcher creates a recording sheet (also called a *coding form* or *tally sheet*) on which to record the information. Each unit should have a separate recording sheet.

Inferences: The inference a researcher can or cannot make on the basis of results is critical in content analysis. Content analysis describes what is in the text. It cannot reveal the intentions of those who created the text or the effects that messages in the text have on those who receive them.

Lesson 37: USE OF SECONDARY DATA

Existing statistics/documents

Prior to the discussion of secondary data, let us look at the advantages and disadvantages of the use of content analysis that was covered in the last lecture. In a way content analysis is also the study of documents through which the writers try to communicate, though some of the documents (like population census) may simply contain figures.

Advantages

1. Access to inaccessible subjects: One of the basic advantages of content analysis is that it allows research on subjects to which the researcher does not have physical access. These could be people of old civilizations, say their marriage patterns. These could also be the documents form the archives, speeches of the past leaders (Quaid-e-Azam) who are not alive, the suicide notes, old films, dramas, poems, etc.

2. Non-reactivity: Document study shares with certain types of observations (e.g., indirect observation or non-participant observation through one-way mirror) the advantage of little or no reactivity, particularly when the document was written for some other purpose. This is unobtrusive. Even the creator of that document, and for that matter the characters in the document, is not in contact with the researcher, who may not be alive.

3. Can do longitudinal analysis: Like observation and unlike experiments and survey, document study is especially well suited to study over a long period of time. Many times the objective of the research could be to determine a trend. One could pick up different periods in past and try to make comparisons and figure out the changes (in the status of women) that may have occurred over time. Take two martial periods in Pakistan, study the newspapers and look at the reported crime in the press.

4. Use Sampling: The researcher can use random sampling. One could decide on the population, develop sampling frame and draw sample random sample by following the appropriate procedure. For example how women are portrayed in weekly English news magazines. One could pick up weekly English news magazines, make a listing of articles that have appeared in the magazines (sampling frame), and draw a simple random sample.

5. Can use large sample size: Larger the sample closer the results to the population. In experimentation as well as in survey research there could be limitations due to the availability of the subjects or of the resources but in document analysis the researcher could increase the sample and can have more confidence in generalization. Let us assume that a researcher is studying the matrimonial advertisements in the newspapers over a long period of time, there should be no problem in drawing a sample as large as several thousand or more.

6. Spontaneity: The spontaneous actions or feelings can be recorded when they occurred rather than at a time specified by the researcher. If the respondent was keeping a diary, he or she may have been recording spontaneous feelings about a subject whenever he or she was inspired to do so. The contents of such personal recording could be analyzed later on.

7. Confessions: A person may be more likely to confess in a document, particularly one to be read only after his or her death, than in an interview or mailed questionnaire study. Thus a study of documents such as diaries, posthumously published autobiographies, and suicide notes may be the only way to obtain such information.

8. Relatively low cost: Although the cost of documentary analysis can vary widely depending on the type of document analyzed, how widely documents are dispersed, and how far one must travel to gain access to them, documentary analysis can be inexpensive compared to large-scale surveys. Many a time's documents are gathered together in a centralized location such as library where the researcher can study them for only the cost of travel to the repository.

9. High quality: Although documents vary tremendously in quality, many documents, such as newspaper columns, are written by skilled commentators and may be more valuable than, for example, poorly written responses to mailed questionnaires.

Disadvantages

1. Bias: Many documents used in research were not originally intended for research purposes. The various goals and purposes for which documents are written can bias them in various ways. For example, personal documents such as confessional articles or autobiographies are often written by famous people or people who had some unusual experience such as having been a witness to a specific event. While often providing a unique and valuable research data, these documents usually are written for the purpose of making money. Thus they tend to exaggerate and even fabricate to make good story. They also tend to include those events that make the author look good and exclude those that cast him or her in a negative light.

2. Selective survival: Since documents are usually written on paper, they do not withstand the elements well unless care is taken to preserve them. Thus while documents written by famous people are likely to be preserved, day-to-day documents such as letters and diaries written by common people tend either to be destroyed or to be placed in storage and thus become inaccessible. It is relatively rare for common documents that are not about some events of immediate interest to the researcher (e.g., suicide) and not about famous occurrence or by some famous person to be gathered together in a public repository that is accessible to researchers.

3. Incompleteness: Many documents provide incomplete account to the researcher who has had no prior experience with or knowledge of the events or behavior discussed. A problem with many personal documents such as letters and diaries is that they were not written for research purposes but were designed to be private or even secret. Both these kinds of documents often assume specific knowledge that researcher unfamiliar with certain events will not possess. Diaries are probably the worst in this respect, since they are usually written to be read only by the author and can consist more of "soul searching" and confession than of description. Letters tend to be little more complete, since they are addressed to a second person. Since many letters assume a great amount of prior information on the part of the reader.

4. Lack of availability of documents: In addition to the bias, incompleteness, and selective survival of documents, there are many areas of study for which no documents are available. In many cases information simply was never recorded. In other cases it was recorded, but the documents remain secret or classified, or have been destroyed.

5. Sampling bias: One of the problems of bias occurs because persons of lower educational or income levels are less likely to be represented in the sampling frames. The problem of sampling bias by educational level is more acute for document study than for survey research. It is a safe generalization that a poorly educated people are much less likely than well educated people to write documents.

6. Limited to verbal behavior: By definition, documents provide information only about respondent's verbal behavior, and provide no direct information on the respondent's nonverbal behavior, either that of the document's author or other characters in the document.

7. Lack of standardized format: Documents differ quite widely in regard to their standardization of format. Some documents such as newspapers appear frequently in a standard format. Large dailies always contain such standard components as editorial page, business page, sports page, and weather report. Standardization facilitates comparison across time for the same newspapers and comparison across different newspapers at one point in time. However, many other documents, particularly personal documents have no standard format. Comparison is difficult or impossible, since valuable information contained in the document at one point in time may be entirely lacking in an earlier or later documents.

8. Coding difficulties: For a number of reasons, including differences in purpose for which the documents were written, differences in content or subject matter, lack of standardization, and differences in length and format, coding is one of the most difficult tasks facing the content analyst. Documents are generally written arrangements, rather than numbers are quite difficult to quantify. Thus analysis of documents is similar to analysis of open-ended survey questions.

9. Data must be adjusted for comparability over time: Although one of the advantages of document study is that comparisons may be made over a long period of time, since external events cause changes so drastic that even if a common unit of measure is used for the entire period, the value of this unit may have changed so much over time that comparisons are misleading unless corrections are made. Look at the change in measuring distance, temperature, currency, and even literacy in Pakistan.

Use of Secondary Data: Existing Statistics/Documents

Secondary Data

Secondary data refer to information gathered by someone other than the researcher conducting the present study. Secondary data are usually historical, already assembled, and do not require access to respondents or subjects. Many types of information about the social and behavioral world have been collected and are available to the researcher. Some information is in the form of statistical documents (books, reports) that contain numerical information. Other information is in the form of published compilations available in a library or on computerized records. In either case the researcher can search through collections of information with a research question and variables in mind, and then reassemble the information in new ways to address the research question.

Secondary data may be collected by large bureaucratic organization like the Bureau of Statistics or other government or private agencies. These data may have been collected for policy decisions or as part of public service.

The data may be a time bound collection of information (population census) as well as spread over long periods of time (unemployment trends, crime rate). Secondary data are used for making comparisons over time in the country (population trends in the country) as well as across the countries (world population trends).

Selecting Topic for Secondary Analysis

Search through the collections of information with research question and variables in mind, and then reassemble the information in new ways to address the research question.

It is difficult to specify topics that are appropriate for existing statistics research because they are so varied. Any topic on which information has been collected and is publicly available can be studied. In fact, existing statistics projects may not neatly fit into a deductive model of research design. Rather researchers creatively recognize the existing information into the variables for a research question after first finding what data are available.

Experiments are best for topics where the researcher controls a situation and manipulates an independent variable. Survey research is best for topics where the researcher asks questions and learns about reported attitudes and behavior. Content analysis is for topics that involve the content of messages in cultural communication.
Existing statistics research is best for topics that involve information collected by large bureaucratic organizations. Public or private organizations systematically gather many types of information. Such information is collected for policy decisions or as a public service. It is rarely collected for purposes directly related to a specific research question. Thus existing statistics research is appropriate when a researcher wants to test hypotheses involving variables that are also in official reports of social, economic and political conditions. These include descriptions of organizations or people in them. Often, such information is collected over long periods. For example, existing statistics can be used by researcher who wants to see whether unemployment and crime rates are associated in 100 cities across a 20 year period.

As part of the trends, say in development, researchers try to develop social indicators for measuring the wellbeing of the people. A *social indicator* is any measure of wellbeing used in policy. There are many specific indicators that are operationalization of well-being. It is hoped that information about social wellbeing could be combined with widely used indicators of economic performance (e.g., gross national product) to better inform government and other policy making officials.

The main sources of existing statistics are government or international agencies and private sources. An enormous volume and variety of information exists. If you plan to conduct existing statistics research, it is wise to discuss your interests with an information professional – in this case, a reference librarian, who can point you in the direction of possible sources.
Many existing documents are "free" – that is, publicly available at libraries – but the time and effort it takes to research for specific information can be substantial. Researchers who conduct existing statistics research spend many hours in libraries or on the internet.
There are so many sources of existing statistics like: UN publications, UNESCO Statistical Yearbook, UN Statistical Yearbook, Demographic Yearbook, Labor Force Survey of Pakistan, and Population Census Data.

Secondary Survey Data

Secondary analysis is a special case of existing statistics; it is reanalysis of previously collected survey or other data that was originally gathered by others. As opposed to primary research (e.g., experiments, surveys, and content analysis), the focus is on analyzing rather than collecting data.

Secondary analysis is increasingly used by researchers. It is relatively inexpensive; it permits comparisons across groups, nations, or time; it facilitates replication; and permits asking about issues not thought by the original researchers. There are several questions the researcher interested in secondary research should ask: Are the secondary data appropriate for the research question? What theory and hypothesis can a researcher use with the data? Is the researcher already familiar with the substantive area? Does the researcher understand how the data were originally gathered and coded?
Large-scale data collection is expensive and difficult. The cost and time required for major national surveys that uses rigorous techniques are prohibitive for most researchers. Fortunately, the organization, preservation, and dissemination of major survey data sets have improved. Today, there are archives of past surveys open to researchers (e.g., data on Population Census of Pakistan, Demographic Survey of Pakistan).

Reliability and Validity

Existing statistics and secondary data are not trouble free just because a government agency or other source gathered the original data. Researchers must be concerned with validity and reliability, as well as with some problems unique to this research technique.
A common error is the *fallacy of misplaced concreteness*. It occurs when someone gives a false impression of accuracy by quoting statistics in greater detail than warranted by how the statistics are collected and by overloading detail. For example, in order to impress an audience, a politician might say that every year 3010,534 persons, instead of saying 3 million persons, are annually being added to the population of Pakistan.

Validity: Validity problems occur when the researcher's theoretical definition does not match that of the government agency or organization that collected the information. Official policies and procedures specify definitions for official statistics. For example, a researcher defines a *work injury* as including minor cuts, bruises, and sprains that occur on the job, but the official definition in government reports only includes injuries that require a visit to a physician or hospital. Many work injuries as defined by the researcher will not be in the official statistics. Another example occurs when a researcher defines people *unemployed* if they would work if a good job was available, if they have to work part-time when they want full-time work, and if they have given up looking for work. The official definition, however, includes only those who are now actively seeking work (full or part-time) as unemployed. The official statistics exclude those who stopped looking, who work part-time out of necessity, or who do not look because they believe no work is available. In both the cases the researcher's definition differs from that in official statistics.

Another validity problem arises when official statistics are a proxy for a construct in which the researcher is really interested. This is necessary because the researcher cannot collect original data. For example, the researcher wants to know how many people have been robbed, so he or she uses police statistics on robbery arrests as a proxy. But the measure is not entirely valid

because many robberies are not reported to the police, and reported robberies do not always result in an arrest.

Another validity problem arises because the researcher lacks control over how information is collected. All information, even that in official government report, is originally gathered by people in bureaucracies as part of their job. A researcher depends on them for collecting organizing, reporting, and publishing data accurately. Systematic errors in collecting the initial information (e.g., census people who avoid poor neighborhoods and make-up information, or people who put a false age on their ID card); errors in organizing and reporting information (e.g., police department that is sloppy about filing crime reports and loses some); errors in publishing information (e.g., a typographical error in a table) all reduce measurement validity.

Reliability: Stability reliability problems develop when official definition or the method of collecting information changes over time. Official definitions of work injury, disability, unemployment, literacy, poverty, and the like change periodically. Even if the researcher learns of such changes, consistent measurement over time is impossible.

Equivalence reliability can also be a problem. For example, studies of police department suggest that political pressures to increase arrests are closely related to the number of arrests. It could be seen when political pressures in one city may increase arrests (e.g., a crackdown on crime), whereas pressures in another city may decrease arrests (e.g., to show drop in crime shortly before an election in order to make officials look better).
Researchers often use official statistics for international comparisons but national governments collect data differently and the quality of data collection varies.

Inferences from Non-Reactive Data:

A researcher's ability to infer causality or to test a theory on the basis of non-reactive data is limited. It is difficult to use unobtrusive measures to establish temporal order and eliminate alternative explanations. In content analysis, a researcher cannot generalize from the content to its effects on those who read the text, but can only use the correlation logic of survey research to show an association among variables. Unlike the case of survey research, a researcher does not ask respondents direct questions to measure variables, but relies on the information available in the text.

Lesson 38: OBSERVATION STUDIES/FIELD RESEARCH

Observation studies are primarily part of qualitative research. Though qualitative and quantitative researches differ yet they complement each other. Qualitative research produces *soft data*: impressions, words, sentences, photos, symbols. Usually it follows an interpretive approach, the goal of which is to develop an understanding of social life and discover how people construct meanings in natural settings. The research process follows a non-linear approach (spiral).

Quantitative research produces *hard data*: numbers. It follows a positivist approach to research in which the researcher speaks the language of variables and hypotheses. There is a much emphasis on precise measurement of variables and the testing of hypotheses. The researcher tries to establish causality. In most of the case there is a linear approach i.e. it follows sequential steps in doing research.

Participant/Non-Participant Observation

Observation studies can be participant or non-participant. In participant observation the researcher directly observes and participates in small scale social settings in the present time. Such a study is also referred to as **field research**, ethnography, or anthropological study. Here the researchers:

- Study people in their natural settings, or in situ.
- Study people by directly interacting with them.
- Gain an understanding of the social world and make theoretical statements about members' perspective.

The people could be a group who interact with each other on regular basis in a field setting: a street corner, a tea shop, a club, a nomad group, a village, etc.

Non-participant studies are such where the research tries to observe the behavior of people without interacting with them. It could be observing the behavior of shoppers in a departmental store through a mirror or on a closed circuit TV. Somebody might be counting the number of vehicles crossing a particular traffic light.

Field researchers study people in a location or setting. It has been used to study entire communities. Field research has a distinct set of methodologies. Field researchers directly observe and interact with community members in natural settings to get inside their perspectives. They embrace an activist or social constructionist perspective on social life. They do not see people as a neutral medium through which social forces operate, nor do they see social meanings as something "out there" to observe. Instead they believe that people create and define the social world through their interactions. Human experiences are filtered through a subjective sense of reality, which affects how people see and act on events. Thus they replace the positivist emphasis on "objective facts" with a focus on the everyday, face-to-face social processes of negotiation, discussion, and bargaining to construct social meaning.

Ethnography and Ethno-methodology

Two modern extensions of field research, ethnography and ethno-methodology, build on the social constructionist perspective.

Ethnography comes from cultural anthropology. *Ethno* means people or a folk distinct by their culture and *graphy* refers to describing something. Thus ethnography means describing a culture and understanding another way of life from the native point of view. It is just an understanding the culture of people from their own perspective.

Ethno-methodology implies how people create reality and how they interpret it. Ethno-methodologists examine ordinary social interaction in great detail to identify the rules for constructing social reality and common sense, how these rules are applied, and how new rules are created. They try to figure out how certain meanings are attached to a reality.

Logic of Field Research

It is difficult to pin down a specific definition of *field research* because it is more of an orientation toward research than a fixed set of techniques to apply. A field researcher uses various methods to obtain information. A field researcher is a 'methodological pragmatist,' a resourceful, talented individual who has ingenuity and an ability to think on his or feet while in the field.

Field research is based on naturalism, which involves observing ordinary events in natural settings, not in contrived, invented, or researcher created settings.

A field researcher examines social meanings and grasps multiple perspectives in natural setting. He or she gets inside the meanings system of members and goes back to an outside or research viewpoint. Fieldwork means involvement and detachment, loyalty and betrayal, both openness and secrecy, and most likely, love and hate. The researcher switches perspectives and sees the setting from multiple pints of view simultaneously. Researchers maintains membership in the culture in which they were reared (research culture) while establishing membership in the groups which they are studying.

The researcher's direct involvement in the field often has an emotional impact. Field research can be fun and exciting, but it can also disrupt one's personal life, physical security, or mental well-being. More than other types of research, it reshapes friendship, family life, self-identity, or personal values.

What Do the Field Researchers Do?

A field researcher does the following:

1. Observes ordinary events and everyday activities as they happen in natural settings, in addition to unusual occurrences.
2. Becomes directly involved with people being studied and personally experiences the process of daily life in the field setting.
3. Acquires an insider's point of view while maintaining the analytic perspective or distance of an outsider.
4. Uses a variety of techniques and social skills in a flexible manner as the situation demands.
5. Produces data in the form of extensive, written notes, as well as diagrams, maps, pictures to provide very detailed descriptions.

6. Sees events holistically (as a whole, not in pieces) and individually in their social context.
7. Understands and develops empathy for members in a field setting, and does not just record 'cold' objective facts.
8. Notices both explicit (recognized, conscious, spoken) and tacit (less recognized, implicit, unspoken) aspects of culture.
9. Observes ongoing social processes without upsetting, or imposing an outside point of view.
10. Copes with high levels of personal stress, uncertainty, ethical dilemmas, and ambiguity.

Steps in Field Research

Naturalism and direct involvement mean that field research is more flexible or less structured than quantitative research. This makes it essential for a researcher to be well organized and prepared for the field. It also means that the steps of project are not entirely predetermined but serve as an approximate guide or road map. Here is just the listing of these steps:

1. Prepare yourself, read the literature and defocus.
2. Select a site and gain access.
3. Enter the field and establish social relations with members.
4. Adopt a social role, learn the ropes, and get along with members.
5. Watch, listen, and collect quality data.
6. Begin to analyze data, generate and evaluate working hypothesis.
7. Focus on specific aspects of the setting and use theoretical sampling.
8. Conduct field interviews with member informants.
9. Disengage and physically leave the setting.
10. Complete the analysis and write the report.

Lesson 39: OBSERVATION STUDIES (Cont.)

Steps in Field Research

Background

Naturalism and direct involvement mean that field research is more flexible or less structured than quantitative research. This makes it essential for a researcher to be well organized and prepared for the field. It also means that the steps of project are not entirely predetermined but serve as an approximate guide or road map. These guideline steps are:

1. ***Prepare yourself, read the literature and defocus.*** As with all social and behavioral research, reading the scholarly literature helps the researcher learn concepts, potential pitfalls, data collection methods, and techniques for resolving conflicts. In addition field researcher finds diaries, novels, journalistic accounts, and autobiographies useful for gaining familiarity and preparing emotionally for the field. Field research begins with a general topic, not specific hypotheses. A researcher does not get locked into any initial misconceptions. He or she needs to be well informed but open to discovering new ideas.
   A researcher first empties his or her mind of preconceptions and defocuses. There are two types of defocusing. The first is casting a wide net in order to witness a wide range of situations, people, and setting – getting a feel of the overall setting before deciding what to include or exclude. The second type of defocusing means not focusing exclusively on the role of researcher. It may be important to extend one's experience beyond a strictly professional role.
   Another preparation for field research is self-knowledge. A field researcher needs to know him or herself and reflect on personal experiences. He or she can expect anxiety, self-doubt, frustration, and uncertainty in the field. Also all kinds of stereotypes about the community should be emptied.
2. ***Select a site and gain access.*** Although a field research project does not proceed by fixed steps, some common concerns arise in the early stages. These include selecting a site, gaining access to the site, entering the field, and developing rapport with members in the field.

   Field site is the context in which events or activities occur, a socially defined territory with shifting boundaries. A social group may interact across several physical sites. For example, a college football team may interact on the playing field, in the dressing room, at a training camp or at the place where they are staying. The team's field site includes all four locations.
   Physical access to a site can be an issue. Sites can be on a continuum, with open and public areas (e.g., public restaurants, airport waiting rooms) at one end and closed and private settings (e.g., private firms, clubs, activities in a person's home) at the other end. A researcher may find that he or she is not welcome or not allowed on the site, or there are legal and political barriers to access.
   Look for the gate keepers for getting an entry. A gatekeeper is someone with the formal authority to control access to a site. It can be a thug at the corner, an administrator of a hospital, or the owner of a business. In formal public areas (e.g., sidewalks, public waiting rooms) rarely have gatekeepers; formal organizations have authorities from whom permission must be obtained. Field researchers expect to negotiate with

gatekeepers and bargain for access. Entry and access can be visualized as an *access ladder*. A researcher begins at the bottom rung, where access is easy and where he or she is an outsider looking for public information. The next access rung requires increased access. Once close on-site observations begin, he or she becomes a passive observer, not questioning what members of community say. With time in the field, the researcher observes specific activities that are potentially sensitive or seeks clarification of what he or she sees or hears. Reaching this access rung is more difficult. Finally, the researcher may try to shape interaction so that it reveals specific information, or he or she may want to see highly sensitive material. This highest rung of access ladder is rarely attained and requires deep trust. Such a situation may be applicable to a site of a public or private organization. In other situations just like entering the village community, the researcher may have to use different kind of access ladder. He or she may have to use local influential and some other contact persons who could introduce the researcher to local leaders and help building the rapport.

3. ***Enter the field and establish social relations with members.*** Present yourself in the field the way it is acceptable to the people to be studied. Develop relations and establish rapport with individual members. Here the researcher may have to learn the local language. A field researcher builds rapport by getting along with members in the field. He or she forges a friendly relationship, shares the same language, and laughs and cries with members. This is a step toward obtaining an understanding of members and moving beyond understanding to empathy – that is seeing and feeling events from another's perspective.

4. ***Enter the field: Adopt a social role, learn the ropes, and get along with members.*** At times, a researcher adopts an existing role. Some existing roles provide access to all areas of the site, the ability to observe and interact with all members, the freedom to move around, and a way to balance the requirements of researcher and member. There could be some limitations for the adoption of specific roles. Such limitations may be because of researcher's age, race, gender, and attractiveness. At other times, a researcher creates new roles or modifies the existing one. The adoption of field role takes time, and a researcher may adopt several different field roles over time.

   The role may also depend upon the level of involvement in the community's activities. The researcher may be a complete observer, observer as participant, participant as observer, and complete participant.

   As a researcher learns the ropes on the field site, he or she learns how to cope with personal stress, how to normalize the social research, and how to act like an "acceptable incompetent." A researcher is in the field to learn, not to be an expert. Depending on the setting, he or she appears to be friendly but naïve outsider, an acceptable incompetent who is interested in learning about social life of the field. An acceptable incompetent is one who is partially competent (skilled or knowledgeable) in the setting but who is accepted as a non-threatening person

5. ***Observing and collecting data: Watch, listen, and collect quality data.*** A great deal of what field researchers do in the field is to pay attention, watch, and listen carefully. They use all the senses, noticing what is seen, heard, smelled, tasted, or touched. The researcher becomes an instrument that absorbs all sources of information.

   Most field research data are in the form of field notes. Good notes are the brick and mortar of field research. Full field notes can contain maps, diagrams, photographs, interviews, tape recordings, videotapes, memos, objects from the field, notes jotted in the field, and detailed notes written away from the field. A field researcher expects to

fill many notebooks, or the equivalent in computer memory. He or she may spend more time writing notes than being in the field.

Writing notes is often boring, tedious work that requires self-discipline. The notes contain extensive descriptive detail drawn from memory. The researcher makes it a daily habit or compulsion to write notes immediately after leaving the field. The notes must be neat and organized because the researcher will return to them over and over again. Once written, the notes are private and valuable. A researcher treats them with care and protects confidentiality.

Field researcher is supposed to collect quality data. What does the term high-quality data mean in the field research, and what does a researcher do to get it? For a quantitative researcher, high quality data are reliable and valid; they give precise, consistent measures of the "objective" truth for all researchers. An interpretive approach suggests a different kind of data quality. Instead of assuming one single, objective truth, field researchers hold that members subjectively interpret experiences within social context. What a member takes to be true results from social interaction and interpretation. Thus high quality field data capture such processes and provide an understanding of the member's viewpoint.

A field researcher does not eliminate subjective views to get quality data: rather, quality data include his or her subjective responses and experiences. Quality field data are detailed descriptions from the researcher's immersion and authentic experiences in the social world of members.

6. ***Begin to analyze data generate and evaluate working hypothesis.*** Right in the field try to look into the research questions and the kind of answers the researcher is getting. The analysis of the answers might help in the generation of hypotheses. Over time are such hypotheses being supported by further field research?
7. ***Focus on specific aspects of the setting and use theoretical sampling.*** Field researcher first gets a general picture, and then focuses on a few specific problems or issues. A researcher decides on specific research questions and develops hypotheses only after being in the field and experiencing it firsthand. At first, everything seems relevant; later, however, selective attention focuses on specific questions and themes.

   Field research sampling differs from survey sampling, although sometime both use snowball sampling. A field researcher samples by taking a smaller, selective set of observations from all possible observations. It is called theoretical sampling because it is guided by the researcher's developing theory. Field researchers sample times, situations, types of events, locations, types of people, or context of interest.

   For example field researcher samples time by observing a setting at different times. He or she observes at all time of the day, on every day of the week, and in all seasons to get a full sense of how the field site stays the same or changes. Another example, when the field researcher samples locations because one location may give depth, but narrow perspective. Sitting or standing in different locations helps the researcher to get a sense of the whole site. Similarly the field researchers sample people by focusing their attention or interaction on different kinds of people (young, adult, old).
8. ***Conduct field interviews with member informants.*** Field researchers use unstructured, non-directive, in-depth interviews, which differs from formal survey research interviews in many ways. The field interview involves asking question, listening, expressing interest, and recording what was said.

   Field interview is a joint production of a research and a member. Members are active participants whose insights, feelings, and cooperation are essential parts of a discussion process that reveals subjective meaning. The interviewer's presence and form of

involvement – how he or she listens, attends, encourages, interrupts, disagrees, initiates topics, and terminates responses – is integral to the respondent's account.

Field research interviews go by many names: unstructured, depth, ethnographic, open ended, informal, and long. Generally, they involve one or more people being present, occur in the field, and are informal and nondirective.

A comparison of the field research interview and a survey interview could be as below:

Survey Interview	Field Interview
1. It has clear beginning and end.	1. The beginning and end are not clear. The interview can be picked up later.
2. The same standard questions are asked of all respondents in the same people sequence.	2. The questions and the order in which they are asked are tailored to specific and situations.
3. The interviewer appears neutral at all times.	3.The interviewer shows interest in responses, encourages elaboration.
4. The interviewer asks questions, and the respondent answers. questions.	4. It is like a friendly conversational exchange but with more interviewer
5. It is almost always with one respondent alone.	5. It can occur in group setting or with others in area, but varies.
6. It has a professional tone and businesslike focus, diversions are ignored.	6. It is interspersed with jokes, aside, stories, diversions, and anecdotes, which are recorded.
7. Closed-ended questions are common, with rare probes.	7. Open-ended questions are common, and probes are frequent.
8. The interviewer alone controls the pace and direction of interview.	8. The interviewer and member jointly control the pace and direction of the interview.
9. The social context in which the interview occurs is ignored and assumed to make little difference.	9. The social context of the interview is noted and seen as important for interpreting the meaning of responses.
10. The interviewer attempts to mold the communication pattern into a standard framework.	10. The interviewer adjusts to the member's norms and language usages.

9. ***Disengage and physically leave the setting.*** Work in the field can last for a few weeks to a dozen years. In either case at some point of work in the field ends. Some researchers suggest that the end comes naturally when the theory building ceases or

reaches a closure; others feel that fieldwork could go on without end and that a firm decision to cut off relations is needed.

Experienced field researchers anticipate a process of disengaging and exiting the field. Depending on the intensity of involvement and the length of time in the field, the process can be disruptive or emotionally painful for both the researcher and the members.

Once researcher decides to leave – because the project reaches a natural end and little new is being learned, or because external factors force it to end (e.g., end of job, gatekeepers order the researcher out) – he or she chooses a method of exiting. The researcher can leave by quick exit (simply not return one day) or slowly withdraw, reducing his or her involvement over weeks. He or she also needs to decide how to tell members and how much advance warning to give. The best way to exist is to follow the local norms and continuing with the friendly relations.

10. ***Complete the analysis and write the report.*** After disengaging from the field setting the researcher writes the report. The researcher may share the written report with the members observed to verify the accuracy and get their approval of its portrayal in print. It may help in determining the validity of the findings. However, it may not be possible to share the findings with marginal groups like addicts, and some deviant groups.

Ethical Dilemmas of Field research

The direct personal involvement of a field researcher in the social lives of other people raises many ethical dilemmas. The dilemmas arise when the researcher is alone in the field and has little time to make a moral decision. Although he or she may be aware of general ethical issues before entering the field, they arise unexpectedly in the course of observing and interacting in the field. Let us look at some of these dilemmas:

Deception: Deception arises in several ways in field research: The research may be covert; or may assume a false role, name, or identity; or may mislead members in some way. The most hotly debated of the ethical issues arising from deception is that of covert versus overt field research. Some support it and see it as necessary for entering into and aiming a full knowledge of many areas of social life. Others oppose it and argue that it undermines a trust between researchers and society. Although its moral status is questionable, there are some field sites or activities that can only be studied covertly. One may have to look into the cost and benefit equation; where the researcher is the best judge.

Covert research is never preferable and never easier than overt research because of the difficulties of maintaining a front and the constant fear of getting caught.

Confidentiality: A researcher learns intimate knowledge that is given in confidence. He or she has a moral obligation to uphold the confidentiality of data. This includes keeping information confidential from others in the field and disguising members' names in field notes.

Involvement with deviants: Researchers who conduct research on deviants who engage in illegal behavior face additional dilemmas. They know of and are sometimes involved in illegal activity. They might be getting 'guilty knowledge.' Such knowledge is of interest not only to law enforcement officials but also to other deviants. The researcher faces a dilemma of building trust and rapport with the deviants, yet not becoming so involved as to violate his or

her basic personal moral standards. Usually, the researcher makes an explicit arrangement with the deviant members.

The powerful: Field researchers tend to study those without power in society (e.g., street people, the poor, children, and lower level workers). Powerful elites can block access and have effective gatekeepers. Researchers are criticized for ignoring the powerful, and they are also criticized by the powerful for being biased toward the less powerful.

Publishing field reports: The intimate knowledge that a researcher obtains and reports creates a dilemma between the right of privacy and the right to know. A researcher does not publicize member secrets, violate privacy, or harm reputations. Yet if he or she cannot publish anything that might offend or harm someone, some of what the researcher learned will remain hidden, and it may be difficult for others to believe the report if critical details are omitted.

Some researchers suggest asking members of the group under study to look at a report to verify its accuracy and to approve of their portrayal in print. For marginal groups (addicts), this may not be possible, but the researchers must always respect member privacy. On the other hand, censorship or self-censorship can be a danger. A compromise position is that truthful but unflattering material may be published only if it is essential to the researchers' larger arguments.

Lesson 40: HISTORICAL COMPARATIVE RESEARCH

History has several meanings; one of which could refer to 'the events of the past.' *Historiography* is the method of doing historical research or of gathering and analyzing historical evidence.

Historical-comparative research is a collection of techniques and approaches. It is a distinct type of research that puts historical time and /or cross-cultural variation at the center of research – that is, which treats what is studied as part of the flow of history and situated in cultural context.

Major questions

Historical comparative research is a powerful method for addressing big questions: How did major societal change take place? What fundamental features are common to most societies? Why did current social arrangements take a certain form in some societies but not in others? For example, historical-comparative researchers have addressed the questions of what caused societal revolutions in china, France, and Russia; how major social institutions, medicine, have developed and changed over two centuries; how basic relationships, like feelings about the value of children, change; why public policy toward the treatment of elderly developed in one way instead of another way in an industrial country; why South Africa developed a system of greater racial separation as the United States moved toward a greater racial integration.

Historical-comparative research is suited for examining the combination of societal factors that produce a specific outcome (e.g., civil war). It is also appropriate for comparing entire social system to see what is common across societies and what is unique, and to study long term change. An H-C researcher may apply a theory to specific cases to illustrate its usefulness. And he or she compares the same social processes and concepts in different cultural or historical contexts.

Researchers also use H-C method to reinterpret data or challenge old explanations. By asking different questions, finding new evidence, or assembling evidence in a different way, the H_C researcher raises questions about old explanations and finds support for new ones by interpreting the data in its cultural-historical context.

Historical-comparative research can strengthen conceptualization and theory building. By looking at historical events or diverse cultural contexts, a researcher can generate new concepts and broaden is or her perspective. Concepts are less likely to be restricted to a single historical time or to a single culture; they can be grounded in the experiences of people living in a specific cultural and historical context.

Historical-Comparative research focuses on:

- Tracing the development of social forms (patterns) overtime as well as its broad its broad historical processes, and
- Comparing those forms and its developmental processes across cultures (countries/nations).

Historical-Comparative research follows scientific approach:

- Can be a survey of events in history – could be through the study of documents.
  Organizations generally document themselves, so if one is studying the development of some organization he/she should examine its official documents: charters, policy statements, speeches by the leaders, and so on. Often, official government documents provide the data needed for analysis. To better appreciate the history of race relations in the United States on e could examine 200 years of laws and court cases involving race.
  One could also do the communication analysis of different documents related to a particular issue (like the communication among the leaders of Pakistan movement through their letters, communication between the migrants to a new country and their relatives back in their country of origin)
  Researcher could also get lot of information by interviewing people who may recall historical events (like interviewing participants in the Pakistan movement).
- Historical-Comparative researchers mostly do a longitudinal analysis i.e. look into the developmental processes of the issues under reference.
- Historical –Comparative researchers make cross-cultural comparisons of the social forms or economic form as well as the developmental processes of those forms, aiming at making generalizations.

Examples:

Social forms: Several researchers have examined the historical development of ideas about different forms of society. The have looked at the progression of social forms from simple to complex, from rural, from rural-agrarian to urban-industrial. The US anthropologist Lewis Morgan, for example, saw a progression from "savagery to "barbarism" to "civilization." Robert Redfield, another anthropologist, has more recently written of a shift from "folk society" to "urban society." Emile Durkheim saw social evolution largely as a process of ever-greater division of labor. Ibn-e-Khaldun looked at the cyclical process of change in the form of societies from nomadic (Al-badawi) to sedentary (Al-hadari). These researchers discuss the forces that produce changes as well as the characteristics of each form of society. The historical evidence collected by researchers from different sources about different societies supports the whole discussion.

Forms of economic systems: Karl Marx examined the forms of economic systems progressing historically from primitive to feudal to capitalistic. All history, he wrote in this context, was a history of class struggle – the "haves" struggling to maintain their advantages and the "have-nots" struggling for a better lot in life. Looking beyond capitalism, Marx saw the development of a 'classless" society. In his opinion the economic forces have determined the societal system.
Not all historical studies in the social sciences have had this evolutionary flavor. Some social scientific readings of the historical record, in fact point to grand cycles rather than to linear progression (Ibn-e-Khaldun, P. Sorokin).

Economic forms and ideas: In his analysis of economic history, Karl Marx put forward a view of economic determinism. That is, he felt that economic factors determined the nature of all other aspects of society. Without denying that economic factors could and did affect other aspects of society, Max Weber argued that economic determinism did not explain everything. Indeed, Weber said, economic forms could come from non-economic ideas. In his research in

the sociology of religion, Weber examined the extent to which religious institutions were the source of social behavior rather than mere reflection of economic conditions. His most noted statement of this side of the issue is found in *The Protestant Ethic and the Spirit of Capitalism.* John Calvin, a French theologian, was an important figure in the *Protestant* reformation of Christianity. Calvin thought that God had already decided the ultimate salvation or damnation of every individual; this idea is called *predestination*. Calvin also suggested that God communicated his decisions to people by making them either successful or unsuccessful during their earthly existence.

God gave each person an earthly "calling" – an occupation or profession – and manifested his or her success or failure through that medium. Ironically, this point of view led Calvin's followers to seek proof of their coming salvation by working hard, saving for economic success.

In Weber's analysis, Calvinism provided an important stimulus for the development of capitalism. Rather than "wasting" their money on worldly comforts, the Calvinists reinvested it in economic enterprises, thus providing the *capital* necessary for the development of capitalism. In arriving at this interpretation of the origin of capitalism, Weber researched the official doctrines of the early Protestant churches, studied the preaching of Calvin and other church leaders, and examined other historical documents.

In three other studies, Weber conducted detailed analyses of Judaism, and the religions of China and India. Among other things, Weber wanted to know why capitalism had not developed in the ancient societies of China, India, and Israel. In none of the three religions did he find any teaching that would have supported the accumulation and reinvestment of capital – strengthening his conclusion about the role of Protestantism in that regard.

Logic of Historical-Comparative Research

Confusion over terms reigns H-C research. Researchers call what they do historical, comparative or historical-comparative, but mean different things. The key question is: Is there a distinct historical-comparative method and logic, or is there just social research that happens to examine social life in the past or in several societies? Some researchers use positivist, quantitative approach to study historical or comparative issues, while others rely on qualitative approach.

Quantitative approach: Positivist researchers reject the idea that there is a distinct H-C method. They measure variables, test hypotheses, analyze quantitative data, and replicate research to discover generalizable laws that hold across time and societies. They see no fundamental distinction between quantitative social research and historical-comparative research. They apply quantitative research techniques, with some minor adjustments, to study the past or other cultures.

- The researcher can focus on the issue in one society few societies or multiple societies.
- The researcher can focus on the issue in one time in the past or examine the issue across many years/periods in the past.
- The researcher can focus on the issue in the present or a recent past period.
- The researcher's analysis could be based primarily on quantitative data or qualitative data.
- Nevertheless, the debate continues.

H-C researchers sometimes use *time-series* data to monitor changing conditions over time, such as data on population, crime rates, unemployment, infant mortality rates, and so forth. The analysis of such data sometimes requires sophistication for purposes of comparability. In case the definitions of the concept vary, it becomes difficult to make comparisons. The definitions not only could vary across nations but also these could vary within the same country over time (In Pakistan the definition of literacy changed from what it was in first population census of 1951 and what we had later on).

Qualitative approach: There are no easily listed steps to follow in the analysis of historical data. Max Weber used the German term *verstehen* –"understanding" – in reference to an essential quality of research in behavioral sciences. He meant that the researcher must be able to take on, mentally, the circumstances, views, and feelings of those being studied to interpret their actions appropriately.

The historical-comparative researcher must find patterns among the voluminous details describing the subject matter of study. Often this takes the form of what Weber called ideal types: conceptual models composed of the essential characteristics of the phenomena. Thus, for example, Weber himself conducted lot of research on bureaucracy. Having observed numerous bureaucracies, Weber detailed those qualities essential to bureaucracies in general: jurisdictional areas, hierarchically structured authority, written files, and so on. Weber did not merely list those characteristics common to all bureaucracies he observed. Rather, he needed to understand fully the essentials of bureaucratic operation to create a theoretical model of the "perfect" (ideal type) bureaucracy.
A distinct, qualitative historical-comparative research differs from the positivist approach. Historical-comparative researchers who use case studies and qualitative data may depart from positivist approach. Their research is an intensive investigation of a limited number of cases in which the social meaning and context are critical. Case studies even in one nation can be very important. Without case studies, scholars "would continue to advance theoretical arguments that are inappropriate, outdated, or totally irrelevant for a specific region".
Historical-comparative researcher focuses on culture (patterns of behavior), tries to see through the eyes of those being studied, reconstructs the lives of the people studied, and examines particular individuals or groups.

A distinct H-C approach borrows from ethnography and cultural anthropology, and some varieties of H-C are close to "thick description" in their attempt to recreate the reality of another time or place.

A Distinct Historical-Comparative Approach

A distinct historical-comparative research method avoids the excesses of the positivist and interpretive approaches. It combines sensitivity to specific historical or cultural contexts with theoretical generalization. Historical-comparative researches may use quantitative data to supplement qualitative data and analysis. The logic and goals of H-C research are closer to those of field research than to those of traditional positivist approaches.

Similarities to Field Research:

First, both H-C research and field research recognize that the researcher's point of view is an avoidable part of research. Both involve interpretation, which introduces the interpreter's

location in time, place, and world-view. H-C research does not try to produce a single, unequivocal set of objective facts. Rather, it is a confrontation of old with new or different world-views. It recognizes that the researcher's reading of historical or comparative evidence is influenced by an awareness of the past and by living in the present. Our present day consciousness of history is fundamentally different from the manner in which the past appeared to any foregoing people.

Second, both field and H-C research examine a great diversity of data. In both, the researcher becomes immersed in data to gain an emphatic understanding of events and people. Both capture subjective feelings and note how every day, ordinary activities signify important social meaning. The researcher inquires, selects, and focuses on specific aspects of social life from the vast array of events, actions, symbols, and words. An H-C researcher organizes data and focuses attention on the basis of evolving concepts. He or she examines rituals and symbols and dramatize culture and investigates the motives, reasons, and justifications for behaviors.

Third, both field and H-C researchers often use *grounded theory*. Theory usually emerges during the process of data collection. Both examine data without beginning with fixed hypotheses. Instead, they develop and modify concepts and theory through a dialogue with the data, then apply theory to reorganize evidence. [Historically grounded theory means that concepts emerge from the analytic problem of history: ordering the past into structures, conjectures and events. History and theory can thus be simultaneously constructed.]

Fourthly, both field and H-C research involve a type of translation. The researcher's meaning system usually differs from that of people he or she studies, but he or she tries to penetrate and understand their point of view. Once the life, language, an perspective of the people being studied have been mastered, the researcher "translates" it for others who read his or her report.

Fifth, both field and H-C researchers focus on action, process, and sequence and see time process as essential. Both say that people construct a sense of social reality through actions that occur over time. Both see social reality simultaneously as something created and changed by people and as imposing a restriction on human choice.

Sixth, generalizations and theory are limited in field and H-C research. Historical and cross-cultural knowledge is incomplete and provisional, based on selective facts and limited questions. Neither deduces propositions or tests hypotheses in order to uncover fixed laws. Likewise replication is unrealistic because each researcher has a unique perspective and assembles a unique body of evidence. Instead, researchers offer plausible accounts and limited generalizations.

Unique Features of H-C Research: Despite its many similarities to field research, some important differences distinguish H-C research. Research on past and on an alien culture share much in common with each other, and what they share distinguishes them from other approaches.

First, the evidence of H-C research is usually limited and indirect. Direct observation and involvement by a researcher is often impossible. A H-C researcher reconstructs what occurred from the evidence, but he or she cannot have absolute confidence in his reconstruction. Historical evidence in particular depends on the survival of data from the past, usually in the form of documents (e.g., letters and newspapers). The researcher is limited to what has not been destroyed and what leaves a trace, record, or other evidence behind.

Second, H-C researchers interpret the evidence. Different people looking at the same evidence often ascribe different meanings to it, so a researcher must reflect on evidence. An understanding of it based on a first glance is rarely possible. The researcher becomes immersed in and absorbs details about a context. For example, a researcher examining the family in the past or a distant country needs to be aware of the full context (e.g., the nature of work, forms of communication, transportation technology, etc.).

Another feature is that a researcher's reconstruction of the past or another culture is easily distorted. Compared to the people being studied, H-C researchers is usually more aware of events occurring prior to the time studied, events occurring in places other than the location studied, and events that occurred after the period studied. This awareness gives the researchers a greater sense of coherence than was experienced by those living in the past or in an isolated social setting. Historical explanation surpasses any understanding while events are still occurring. The past we reconstruct is more coherent than the past when it happened.

A researcher cannot see through the eyes of those being studied. Knowledge of the present and changes over time can distort how events, people, laws, or even physical objects are perceived. When the building was newly built (say in 1800) and standing among similar buildings, the people living at the time saw it differently than people do in the 21st century.

H-C researcher does not use deterministic approach. H-C research takes an approach to causality that is more contingent than determinist. A H-C researcher often uses combinational explanations. They are analogous to a chemical reaction in which several ingredients (chemicals, oxygen) are added together under specified conditions (temperature, pressure) to produce an outcome (explosion). This differs from a linear causal explanation. H-C research focuses on whole cases and on comparisons of complex wholes versus separate variables across cases. The logic is more "A, B, and C appeared together in time and place, then D resulted" than "A caused B, and B caused C, and C caused D."

H-C researcher has the ability to shift between a specific context and a generalized context for purposes of comparison. A researcher examines several specific contexts, notes similarities and differences, then generalizes. He or she looks again at the specific context using the generalization. H-C researchers compare across cultural-geographic units. They develop trans-cultural concepts for purposes of comparative analysis. In comparative research, a researcher translates the specifics of a context into a common, theoretical language. In historical research theoretical concepts are applied across time.

Lesson 41: HISTORICAL-COMPARATIVE RESEARCH (Cont.)

Conducting historical-comparative research does not involve a rigid set of steps and, with only a few exceptions; it does not use complex or specialized techniques. Nevertheless, some guideline for doing historical-comparative research may be provided.

Conceptualizing the Object of Inquiry

An H-C researcher begins by becoming familiar with the setting and conceptualizes what is being studied. He or she may start with a loose model or set of preliminary concepts and apply them to specific setting. The provisional concepts contain implicit assumptions or organizing categories that he or she uses to see the world, "package" observations, and search through evidence.

Decide on the historical era or comparative settings (nations or units). If the researcher is not already familiar with historical era or comparative settings, he or she conducts an orientation reading (reading several general works). This will help the researcher grasp the specific setting, assemble organizing concepts, subdivide the main issue, and develop lists of questions relating to specific issue.

Locating Evidence

The researcher locates and gathers evidence through extensive bibliographic work. A researcher uses many indexes, catalogs, and reference works that list what libraries contain. For comparative research, this means focusing on specific nations or units and on particular kinds of evidence within each. The researcher frequently spends weeks searching for sources in libraries, travels to several different specialized research libraries, and reads dozens of books and articles. Comparative research often involves learning one or more foreign languages.

As the researcher masters the literature and takes numerous detailed notes, he or she completes many specific tasks: creating a bibliography list (on cards or on computer) with complete citations, taking notes that are neither too skimpy nor too extensive, leaving margins on note cards for adding themes later on, taking all note in the same format, and developing a file on themes or working hypothesis.

A researcher adjusts initial concepts, questions, or focus on the basis of what he or she discovers in the evidence. New issues and questions arise as he or she reads and considers a range of research reports at different levels of analysis (e.g., general context and detailed narratives on specific topic), and multiple studies on a topic, crossing topic boundaries.

Evaluating Quality of Evidence

As the H-C researcher gathers evidence, he or she asks two questions: Hoe relevant is the evidence to emerging research questions and evolving concepts? How accurate and strong is the evidence?
The question of relevance is difficult one. All documents may not be equally valuable in reconstructing the past. As the focus of research shifts, evidence that was not relevant can become relevant. Likewise, some evidence may stimulate new avenues of inquiry and search for additional confirming evidence.

Accuracy of evidence may be looked at for three things: the implicit conceptual framework, particular details that are required and empirical generalizations. H-C researcher evaluates alternative interpretations of evidence and looks for "silences," of cases where the evidence fails to address an event, topic, or issue.

Researchers try to avoid possible fallacies in the evidence. For example, a fallacy of pseudo proof is failure to place something into its full context. The evidence might state that that there was a 50 percent increase in income taxes, but it is not meaningful outside of a context. The researcher must ask: Did other taxes decline? Did income increase? Did the tax incase apply to all income? Was everyone affected equally?

Organizing Evidence

As a researcher gathers evidence and locates new sources, he or she begins to organize the data. Obviously, it is unwise to take notes madly and let them pile up haphazardly. A researcher usually begins a preliminary analysis by noting low-level generalizations or themes. For example, in a study of revolution, a researcher develops a theme: The rich peasants supported the old regime. He or she can record this theme in his or her notes and later assign to significance.

Researcher organizes evidence, using theoretical insights to stimulate new ways to organize data and for new questions to ask of evidence. The interaction of data and theory means that a researcher goes beyond a surface examination of the evidence based on theory. For example, a researcher reads a mass of evidence about a protest movement. The preliminary analysis organizes the evidence into a theme: People who are active in protest interact with each other and develop shared cultural meanings. He or she examines theories of culture and movements, then formulates new concept: "oppositional movement subculture." The researcher then uses this concept to re-examine the evidence.

Synthesizing

The researcher refines concepts and moves toward a general explanatory model after most of the evidence is in. Old themes or concepts are discussed or revised, and new ones are created. Concrete events are used to give meaning to concepts.
The researcher looks for patterns across time or units, and draws out similarities and differences with analogies. He or she organizes divergent events into sequences and groups them together to create a larger picture. Plausible explanations are then developed that subsume both concepts and evidence as he or she organizes the evidence into a coherent whole. The researcher then reads and rereads notes and sorts and resorts them into piles or files on the basis of organizing schemes. He or she looks for and writes down the links or connections he or she sees while looking at evidence in different ways.

Synthesis links specific evidence with an abstract model of underlying relations or causal mechanism. A researcher often looks for new evidence to verify specific links that appear only after an explanatory model is developed. He or she evaluates how well the model approximates the evidence and adjusts it accordingly.

Historical-comparative researchers also identify critical indicators and supporting evidence for themes or explanations. A *critical indicator* is unambiguous evidence, which is usually sufficient for inferring a specific theoretical relationship. Researchers seek these indicators for key parts of an explanatory model. Indicators critically confirm a theoretical inference and occur when many details suggest a clear interpretation.

Writing a Report

Combine evidence, concepts, and synthesis into a research report. The way in which the report is written considered as key in H-C research. Assembling evidence, arguments, and conclusions into a report is always a crucial step; but more than in quantitative approaches, the careful crafting of evidence and explanation makes or breaks H-C research. A researcher distills mountains of evidence into exposition and prepares extensive footnotes. She or he weaves together evidence and arguments to communicate a coherent, convincing picture to readers.

Data and Evidence in Historical context

Historical-comparative researchers draw on four types' historical evidence or data:

1. Primary sources;
2. Secondary sources;
3. Running records; and
4. Recollections.

Traditional historians rely heavily on primary sources. H-C researchers often use secondary sources or the different data types in combination.

1. Primary Sources: The letters, diaries, newspapers, movies, novels, articles of clothing, photographs, and so forth are those who lived in the past and have survived to the present are the primary sources. They are found in archives (a place where documents are stored), in private collections, in family closets, or in museums. Today's documents and objects (our letters, television programs, commercials, clothing, and automobiles) will be primary sources for future historians. An example of a classic primary source is a bundle of yellowed letters written by a husband away at war to his wife and found in a family closet by a researcher.

Published and unpublished written documents are the most important type of primary source. Researchers find them in their original form or preserved in microfilm or on film. They are often the only surviving record of the words, thoughts, and feelings of people in the past. Written documents are helpful for studying societies and historical periods with writing and literate people. A frequent criticism of written sources is that elites or those in official organizations largely wrote them; thus the views of the illiterate, the poor, or those outside official social institutions may be overlooked.

The written word on paper was the main medium of communication prior to the widespread use of telecommunications, computers, and video technology to record events and ideas. In fact, the spread of forms of communication that do not leave a permanent physical record (e.g., telephone conversation), and which have largely replaced letters, written ledgers, and newspapers, make the work of future historians difficult.

***Potential Problems with Primary Sources*:** The key issue is that only a fraction of everything written or used in the past has survived into present. Moreover, whatever is survived is nonrandom sample of what once existed.

H-C researchers attempt to read primary sources with the eyes and assumptions of a contemporary who lived in the past. This means "bracketing," or holding back knowledge of subsequent events and modern values. "If you do not read the primary sources with an open mind and an intention to get inside the minds of the writings and look at things the way *they* saw them, you are wasting time." For example, when reading a source produced by a slaveholder, moralizing against slavery or faulting the author for not seeing its evil is not worthwhile. The H-C researcher holds back moral judgments and becomes a moral relativist while reading primary sources. He or she must think and believe like subjects under study, discover how they performed in their own eyes.

Another problem is that locating primary documents is a time consuming task. A researcher must search through specialized indexes and travel to archives or specialized libraries. Primary sources are often located in dusty, out-of-the-way room full of stacked cardboard boxes containing masses of fading documents. These may be incomplete, unorganized, and various stages of decay. Once the documents or other primary sources are located, the researcher evaluates them subjecting them to external and internal criticism.
External criticism means evaluating the authenticity of a document itself to be certain that it is not a fake or a forgery. Criticism involves asking: Was the document created when it is claimed to have been, in the place where it was supposed to be, and by the person who claims to be its author? Why was the document produced to begin with, and how did it survive? Once the document passes as being authentic, a researcher uses *internal criticism*, an examination of the document's contents to establish credibility. A researcher evaluates whether what is recorded was based on what the author directly witnessed or is secondhand information.

Many types of distortions can appear in primary documents. One is *bowdlerization* – a deliberate distortion designed to protect moral standards or furnish a particular image. For example, photograph is taken of the front of a building. Trash and empty bottles are scattered all around the building, and the paint is faded. The photograph, however, is taken of the one part of the building that has little trash and is framed so that the trash does not show; dark room techniques make the faded paint look new.

2. Secondary Sources: Social researchers often use secondary sources, the books and articles written by specialist historians and other researchers, as an evidence of past conditions. It has its own limitations.

Potential Problems with Secondary Sources: The limitations of secondary historical evidence include problems of inaccurate historical accounts and lack of studies in areas of interest. Such sources cannot be used to test hypotheses. Post facto explanations cannot meet positivist criteria of falsifiability, because few statistical controls can be used and replication is not possible.

The many volumes of secondary sources present a maze of details and interpretations for an H-C researcher. He or she must transform the mass of specialized descriptive studies into an intelligible picture. This picture needs to be consistent with the reflective of the richness of the evidence. It also must bridge the many specific time periods and locals. The researcher faces potential problems with secondary sources.

One problem is reading the works of historians. Historians do not present theory-free, objective "facts." They implicitly frame raw data, categorize information, and shape evidence using concepts. The historian's concepts are a mixture drawn from journalism, language of historical actors, ideologies, Philosophy, everyday language in the present, and social science. Most lack a rigorous definition, are vague, are applied inconsistently, and are not mutually exclusive, nor exhaustive.

Second problem is that historian's selection procedure is not transparent. They select some information from all possible evidence. From the infinite oceans of facts historian selects those, which are significant for his purpose. Yet, the H-C researcher does not know how this was done. Without knowing the selection process, a historical-comparative researcher must rely on the historian's judgments, which can contain biases.

A third problem is in the organization of the evidence. Historians organize evidence as they write works of history. They often write *narrative history*. This compounds problems of undefined concepts and the selection of evidence. In the historical narrative, the writer organizes material chronologically around a single coherent "story." The logic is that of a sequence of unfolding action. Thus, each part of the story is connected to each other part by its place in the time order of events. Together all the parts form a unity or whole. Conjecture and contingency are the key elements of the narrative form. The contingency creates a logical interdependency between earlier and later elements.

With its temporal logic, the narrative organization differs from how the social researchers create explanations. It also differs from quantitative explanation in which the researcher identifies statistical patterns to infer causes. A major difficulty of the narrative is that the organizing tool – time order or position in a sequence of events – does not alone denote theoretical or historical causality. In other word, the narrative meets only one of the three criteria for establishing causality – that of temporal sequence.

Fourth and the last problem is that historiography schools, personal beliefs, social theories influence a historian, as well as current events at the time research were conducted. Historians writing today examine primary material differently from how those writing in the 1920s did. In addition, there are various schools of historiography (diplomatic, Marxist) that have their own rules for seeking evidence and asking questions. It is also said history gets written by the people in power; it may include what the people in power want to be included.

3. Running Records: Running records consist of files or existing statistical documents maintained by organizations. An example of a running record is keeping of vital statistics by the government departments in Pakistan; vital statistics relating to births, marriage, divorce, death, and other statistics of vital events. We also have so many documents containing running records relating to demographic statistics, and economic statistics being maintained by different agencies of UNO.

4. Recollections: The words or writing of individuals about their past lives or experiences based on memory are recollections. These can be in the form of memoirs, autobiographies, or interviews. Because memory is imperfect, recollections are often distorted in ways that primary sources are not.

In gathering *oral history*, a type of recollection, a researcher conducts unstructured interviews with people about their lives or events in the past. This approach is especially valuable for non-elite groups or the illiterate.

Evaluating the Documents

Historical-comparative researchers often use secondary sources or different data types in combination. For secondary sources they often use existing documents as well as the data collected by other organizations for research purposes. While looking into the authenticity of these document researchers often want answers to the questions like: Who composed the documents? Why were these written? What methods were used to acquire the information? What are some of the biases in the documents? How representative was the sample? What are the key categories and concepts used? What sorts of theoretical issues and debates do these documents cast light on?

Problems in Comparative Research

Problems in other types of research are magnified in a comparative study. In principle, there is no difference between comparative cross-cultural research and research conducted in a single society. The differences lie, rather, in the magnitude of certain types of problems.

The Units being compared: For convenience, comparative researchers often use nation-state as their unit of analysis. The nation-state is the major unit used in thinking about the divisions of people across globe today. The nation-state is a socially and politically defined unit. In it, one government has sovereignty over populated territory. The nation-state is not the only unit for comparative research, but also frequently used as a surrogate for culture, which more difficult to define as a concrete, observable unit. The boundaries of nation-state may not match those of a culture. In some situations a single culture is divided into several nations (Muslim culture); in other cases, a nation-state contains more than one culture (Canada). The nation-state is not always the best unit for comparative research. A researcher should ask: What is the relevant comparative unit for my research question – the nation, the culture, a small region, or a subculture?

Problems of Equivalence: Equivalence is a critical issue in all research. It is the issue of making comparisons across divergent contexts, or whether a researcher, living in a specific time period and culture, correctly reads, understands, or conceptualizes data about people from different historical era or culture. Without equivalence, a researcher cannot use the same concepts or measures in different cultures or historical periods, and this makes comparison difficult, if not impossible. It is similar to the problems of validity in quantitative research. Look at the concept of a *friend.* We ask somebody how many friends do you have? People living in different countries may have different meanings attached to it. Even in Pakistan, we have variations in its meaning across the Provinces, and between rural and urban areas.

Ethical problems are less intense in H-C research than in other types of social research because a researcher is less likely to have direct contact with people being studied. Historical-comparative research shares the ethical concerns found in other non-reactive research techniques.

Lesson 42: FOCUS GROUP DISCUSSION

A visitor to a locality stops by a house and inquires about the address of a resident he wants to see. May be he starts talking with a couple of persons asking for their help. In the meantime, some other passersby, or coming out of other houses join, showing their curiosity about the issue. They ask for some more information about the resident concerned, and then start discussing among them to come up with the exact identification of the resident. As an outcome of this discussion they would guide the visitor to reach the destination. This is quite a common feature in a folk society (village, neighborhood in a city) where we may start talking with a couple of persons and others come and join the conversation. This is an example of *informal* focus group discussion, which is built upon the social networks that operate in a natural setting. These social networks include both kinsfolk and other neighbors. In some cases the participants may be the local decision makers.

In research, focus group discussions (FGD) are a more formal way of getting groups of people to discuss selected issues. A focus group discussion is a group discussion of 6-12 persons guided by a facilitator, during which group members talk freely and spontaneously about a certain topic. There may be some disagreement about the exact number of participants in the discussion, as one comes across variations in numbers (6 to 10, 6 to 12, 6 to15, 8to 10, 5 to 7) in different books on research methods. The trend has been toward smaller groups due to some problems with the larger groups, which like:

- In a bigger group each participant's speaking time is substantially restricted. Dominant/submissive relationships are almost inevitable.
- Frustration or dissatisfaction among group members is likely to result because of some members' inability to get a turn to speak. This produces lower quality and quantity of data.
- Participants are often forced into long speeches, often containing irrelevant information, when they get to speak only infrequently.
- The tendency for side conversations between participants increases.

In contrast, smaller group sessions are felt to provide greater depth response for each participant. The group is often more cohesive and interactive, particularly when participants are professionals, such as physicians or pharmacists.

The key factor concerning group size is generally the of group purpose. If the purpose of the group is to generate as many ideas as possible, a larger group may be most useful. If the purpose of the group is to maximize the depth of expression from each participant, a smaller group works better.

The Purpose of FGD

The purpose of an FGD is to obtain in-depth information on concepts, perceptions, and ideas of the group. An FGD aims to be more than a question-answer interaction (Focus group interview is different). Here the idea is that group members discuss the topic among themselves.

Formal Focus Groups

Formal groups are formally constituted, that is these are organized in advance by inviting the selected individuals to participate in the discussion on a specific issue. They are structured

groups brought together in which the participants are expected to have similar background, age, sex, education, religion, or similar experiences. Similarity in background is likely to make them comfortable where they could express their viewpoint frankly and freely. If the big boss and his junior officer working in an organization together participate in an FGD, the junior officer may not be able to express his or her opinion freely in the presence of his/her boss. Similarly, in some situations the children may experience some inhibitions in expressing their views on a sensitive issue in the presence of their parents. A lot depends on the kind of issue that is to be discussed.

The group is guided by a moderator/facilitator and the participants address a specific issue (talk freely, agree or disagree among them) within a specified time in accordance with clearly spelled out rules of procedure.

Designing a Focus group Study

As with other approaches to studying social phenomena, designing a focus group study requires careful thought and reflection. Given that focus groups can be used for a variety of purposes within social research, the design of focus group study will depend on its purpose. At one extreme, FGD is used at the exploratory stage of the study (FGD may help in the identification of variables, formulation of questions and response categories) and at the other extreme, when qualitative information is needed on issues about which the researchers have substantial background knowledge and a reasonable grasp of the issues. Here we are focusing on the latter type of design.

How to conduct FGD?

The following guideline may be provided for conducting FGD.

1. **Preparation**:
   - Selection of topic, questions to be discussed. It is appropriate to define and clarify the concepts to be discussed. The basic idea is to lay out a set of issues for the group to discuss. It is important to bear in mind that the moderator will mostly be improvising comments and questions within the framework set by the guidelines. By keeping the questions open-ended, the moderator ca stimulates useful trains of thought in the participants that were not anticipated.
   - Selecting the study participants: Given a clear idea of the issues to be discussed, the next critical step in designing a focus group study is to decide on the characteristics of the individuals who are to be targeted for sessions. It is often important to ensure that the groups all share some common characteristics in relation to the issue under investigation. If you need to obtain information on a topic from several different categories of informants who are likely to discuss the issue from different perspectives, you should organize a focus group for each major category. For example a group for men and a group for women, or a group for older women and group for younger women. The selection of the participants can be on the basis of purposive or convenience sampling. The participants should receive the invitations at least one or two days before the exercise. The invitations should explain the general purpose of the FGD.
   - Physical arrangements: Communication and interaction during the FGD should be encouraged in every way possible. Arrange the chairs in a circle. Make sure the area

will be quite, adequately lighted, etc., and that there will be no disturbances. Try to hold the FGD in a neutral setting that encourages participants to freely express their views. A health center, for example, is not a good place to discuss traditional medical beliefs or preferences for other types of treatment. Neutral setting could also be from the perspective of a place where the participants feel comfortable to come over and above their party factions.

2. Conducting the session:

- One of the members of the research team should act as a "facilitator" or "moderator" for the focus group. One should serve as "recorder."
- ***Functions of the Facilitator:*** The facilitator should not act as an expert on the topic. His or her role is to stimulate and support discussion. He should perform the following functions:
  - **Introduce the session**: He or she should introduce himself/herself as facilitator and intro duce the recorder. Introduce the participants by name or ask them to introduce themselves (or develop some new interesting way of introduction). Put the participants at ease and explain the purpose of the FGD, the kind of information needed, and how the information will be used (e.g., for planning of a health program, an education program, et.).
  - **Encourage discussion:** The facilitator should be enthusiastic, lively, and humorous and show his/her interest in the group's ideas. Formulate questions and encourage as many participants as possible to express their views. Remember there is no "right" or "wrong" answers. Facilitator should react neutrally to both verbal and nonverbal responses.
  - **Encourage involvement:** Avoid a question and answer session. Some useful techniques include: asking for clarification (can you tell me more?); reorienting the discussion when it goes off the track (saying: wait, how does this relate to the issue? Using one participant's remarks to direct a question to another); bringing in reluctant participants (Using person's name, requesting his/her opinion, making more frequent eye contact to encourage his participation); dealing with dominant participants (avoiding eye contact or turning slightly away to discourage the person from speaking, or thanking the person and changing the subject).
  - **Avoid being placed in the role of expert:** When the facilitator is asked for his/her opinion by a respondent, remember that he or she is not there to educate of inform. Direct the question back to the group by saying: "What do you think?" "What would you do?" Set aside time, if necessary, after the session to give participants the information they have asked.

    Do not try to give comments on everything that is being said. Do not feel you have to say something during every pause in the discussion. Wait a little and see what happens.
  - **Control the timing of the meeting but unobtrusively:** Listen carefully and move the discussion from topic to topic. Subtly control the time allocated to various topics so as to maintain interest. If the participants spontaneously jump from one topic to the other, let the discussion continue for a while because useful additional information may surface and then summarize the points brought up and reorient the discussion.
  - **Take time at the end of the meeting to summarize, check for agreement and thank the participants:** Summarize the main issues brought up, check whether all agree and ask for additional comments. Thank the participants and let them know that their ideas had been valuable contribution and will be used for planning the proposed research/intervention/or whatever the purpose of FGD was.

Listen to the additional comments made after the meeting. Sometime some valuable information surfaces, which otherwise may remain hidden.

Lesson 43: FOCUS GROUP DISCUSSION (Cont.)

Functions of the Recorder

The recorder should keep a record of the content of the discussion as well as emotional reactions and important aspects of group interaction. Assessment of the emotional tone of the meeting and the group process will enable the researcher to judge the validity of the information collected during the FGD. Record the following:

- Date, time, and place:
- Names and characteristics of participants:
- General description of the group dynamics (level of participation, presence of a dominant participant, level of interest):
- Opinions of participants, recorded as much as possible in their own words, especially for key statements: and
- Vocabulary used, particularly in focus group discussions that are intended to assist in developing questionnaire or other material as stipulated under the topic.

It is highly recommended that a tape/video recorder (with permission) be used to assist capturing information. Even if a tape/video recorder is used, notes should be taken as well, in case the machine malfunctions and so that information will be available immediately after the session.

A supplementary role for the recorder could be to assist the facilitator (if necessary) by drawing his/her attention to:

- Missed comments from participants, and
- Missed topics (the recorder should have a copy of the discussion guide, key probe questions during the FGD).

If necessary, the recorder could also help resolve conflict situations that facilitator may have difficulty handling.

Number and duration of sessions: The number of **focus group sessions** to be conducted depends upon project needs, resources, and whether new information is still coming from the sessions (that is, whether contrasting views from various groups in the community are still emerging).

One should plan to conduct at least two different focus group discussions for each subgroup (for example two for males and two for females).

For **duration**, a focus group session typically lasts up to an hour and a half. Generally the first session with a particular type of group is longer than the following ones because all of the information is new. Thereafter, if it becomes clear that all the groups have the same opinion on particular topics, the facilitator may be able to move the discussion along more quickly to other topics that still elicit new points of view.

3. Analysis of Results

- After each focus group session, the facilitator and the recorder should meet to review and complete the notes taken during the meeting. This is also the right moment to

evaluate how the focus group went and what changes might be made when facilitating future groups.

- A full report of the discussion should be prepared that reflects the discussion as completely as possible using the participants' own words. List the key statements, ideas, and attitudes expressed for each topic of discussion.
- After the transcript of the discussion is prepared, code the statements right away, using the left margin? Write comments in the right margin. Formulate additional questions if certain issues are still unclear or controversial and include them in the next FGD.
- Further categorize the statements for each topic, if required. Compare answers of different subgroups (e.g., answers of young mothers and answers of mothers of above childbearing age in the FGD on changes in weaning practices).
  The findings must be recorded in coherent manner. For example, if young women in all focus group discussions state that they start weaning some 3-6 months earlier than their mothers did and the women above childbearing age confirm this statement, one is likely to have a solid finding. If findings contradict each other, one may need to conduct some more focus group discussions or bring together representatives from two different subgroups to discuss and clarify the differences.
- Summarize the data in a matrix, diagram, flowchart, or narrative, if appropriate, and interpret the findings.
- Select the most useful quotations that emerged from the discussions to illustrate the main ideas.

4. Report Writing

- Start with a description of the selection and composition of the groups of participants and a commentary on the group process, so the reader can assess the validity of the reported findings.
- Present the findings, following a list of topics and guided by the objective(s) of the FGD. Include quotations whenever possible, particularly for key statements.
-

Uses of Focus Group Discussions

- The primary advantage of focus groups is its ability to quickly and inexpensively grasp the core issues of the topic. One might see focus group discussions as *synergistic* i.e. the combined effort of the group will produce a wider range of information, insights, and ideas than will the accumulation of separately secured responses of a number of individuals. Even in non-exploratory research, focus group discussions produce a lot more information far more quickly, and at less cost than individual interviews.
- As part of exploratory research, focus group discussions help the researcher to focus on the issue and develop relevant research hypotheses. In the discussions the relevant variables are identified, and relationships are postulated. Once the variables are identified, the same focus group discussions help in the formulation of questions, along with the response categories, for the measurement of variables.
- Focus group discussion is an excellent design to get information from non-literates.
- Focus groups discussions are a good means to discover attitudes and opinions that might not be revealed through surveys. This is particularly useful when the researcher is looking at the controversial issue, and the individual might be able to give his opinion as such but not discuss the issue in the light of other viewpoints. In focus group

discussions there is usually a *snowballing* effect. A comment by one often triggers a chain of views from other participants.

- Focus group discussions are well accepted in the folk communities, as this form of communication already exists whereby the local communities try to sort out controversial issues.
- Focus group discussions generate new ideas, questions about the issues under consideration. It may be called *serendipity (*surprise ideas). It is more often the case in a group than in an individual interview that some idea will drop out of the blue. The group also affords the opportunity to develop the idea to its full significance.
- Focus group discussions can supplement the quantitative information on community knowledge, attitude, and practice (KAP), which may have already been collected through survey research.
- Focus group discussions are highly flexible with respect to topic, number of participants, time schedule, location, and logistics of discussion.
- Focus group discussions provide a direct link between the researcher and the population under study. In fact most of the focus group discussions are held close to people's places of living and work. It helps in getting the realistic picture of the issue directly from the people who are part of it.
- For some researchers, focus group discussions may be a fun. They enjoy discussing the issues directly with the relevant population.

Limitations

- Results of the focus group discussions cannot usually be used for generalization beyond the population from where the participants in FGD came. One important reason being the lack of their representative-ness about other populations.
- It is often seen that participants usually agree with the responses from fellow members (for different reasons). Without a sensitive and effective facilitator, a single, self-appointed participant may dominate the session. Researchers have to be cautious when interpreting the results.
- The moderator may influence focus group discussion and may bias the information.
- Focus group discussions may have limited value in exploring complex beliefs of individuals, which they may not share in open discussion.
- It is possible that focus group discussions may paint a picture of what is socially acceptable in the community rather than what is actually occurring or is believed. The picture may be given of what is ideally desirable and not what is really in practice. Participants may like to project a good image of their community to strangers; hence the information may be highly contaminated.

Case Study

Case study is a comprehensive description and analysis of a single situation or a number of specific situations i.e. cases. It is an intensive description and analysis of a case. Researchers often use qualitative approach to explore the case in as rich a detail as possible. The examples could be a case study of a highly successful organization, a project (Orangi Pilot Project, Karachi), a group, a couple, a teacher, and a patient. In a way it is more like a clinical approach to study the case in detail.

If the researcher is looking at highly successful organization then he may have to look into all the factors that may have contributed to its success. The factors may relate to the availability of the financial resources, the management, the work environment, work force, the political atmosphere, and many more. All these factors may be considered as different dimensions for studying the organization. Similarly, one may do the case study of a happily married couple.

Data Sources

Usually the following sources are suggested:

- Naturalistic observations (ethnographic studies)
- Interviews
- Life histories
- Tests (Psychological, clinical)

In most of the cases the data sources may depend upon the nature of the case under investigation. If we are trying to do the case study of a community, then one shall be looking for naturalistic observations (ethnographic information), in-depth interviews with individuals, life histories of the people, and anything, which may have previously been written about the community.

Preserve the unitary character of the object under study: The researcher tries to study the case as a whole by collecting the breadth of data about the totality of the unit. For the collection of such data a multidisciplinary approach may be used, which could help looking at the case from different perspectives prior to coming to some conclusions. Hence it is not a segmental study; therefore effort is made to study it as a whole and while making the analysis try to present it as a unit.

Case Control studies

It is also possible to select two groups (taking them as cases), one with an effect (study group) and the other without effect (control group). Both the cases are similar except for the effect. One could look at the case of Manga Mandi village, where, a few years back, deformities in the bones of children were observed in one part of the village. Here one could explore the totality of the background of affected and unaffected parts of the locality, each being treated as a unit. One could develop hypothesis by having an in-depth analysis of the affected and unaffected parts.

Case study is empirical

Case study is empirical because:

- It investigates a contemporary phenomenon within its real life context. It is retrospective study in which the researcher follows the research process from effect to its cause. It is a study back in time. Just like a medical practitioner who is treating his patient as a case, tries to diagnose his/her ailment by taking the case history, doing the physical examination, and if necessary, doing some laboratory tests. On the basis of the triangulation of all this information the medical doctor traces the cause of patient's present ailment. The information is empirical.
- When the boundaries between the phenomenon and context are not clearly evident, the researcher tries to use multiple sources of evidence. One could say that the researcher is

trying to look at the case by using multiple dimensions, and trying to come up with a finding that is empirical.

Limitations

Despite the fact that the case study may be considered empirical yet it lack rigor in its approach. Therefore it has limitations with respect to the reliability of the findings. Also one could question whether the case is representative of some population.

Lesson 44: REPORT WRITING

Although every report is custom-made for the project it represents, some conventions of report format are universal. These conventions have developed over a long period of time, and they represent a consensus about what parts are necessary to a good research report and how they should be ordered. The consensus is not an inviolable law, though. Each report writing book suggests its own unique format and every report writer has to pick and choose the parts and the order that work best for the project at hand. Many companies and universities also have an in-house, suggested report formats or writing guides that researchers should be aware of.

Report format:

Report format is the general plan of organization for the parts of a written or oral research report. The researchers tailor the format to the project. The format of a research report may need adjustment for two reasons: (1) to obtain the proper level of formality and (2) to decrease the complexity of the report. We shall look at the most formal type i.e. a report for a large project done within an organization or one done by a research agency for a client company. This sort of report is usually bound with a permanent cover and may be hundreds of pages long.

Students who are writing a thesis shall have to follow the format requirements of the university where they shall be submitting it. Thesis format is little different, and it shall be explained as we proceed.

The Makeup of the Report – the Report Parts

- **Prefatory parts**
  1. Title fly page
  2. Title page
  3. Letter of transmittal
  4. Letter of authorization
  5. Table of contents
  6. Executive summary

- **Main body**
  1. Introduction
  2. Methodology
  3. Results
  4. Conclusions and recommendations
  5. References

- **Appended parts**
  1. Data collection forms (questionnaires, checklist, interview guide, other forms)
  2. Detailed calculations
  3. General tables
  4. Other support material
  5. Bibliography, if needed

Let us now look at each one of the parts of the report.

Prefatory Parts

Title Fly Page: Only the title appears on this page. For the most formal reports, a title fly page precedes the title page. Most of the reports don't have it. May be it is more like the dustcover of some books.

Title Page: The title page should include four items: the title of the report, the name(s) of the person(s) for whom the report was prepared, the name(s) of person(s) who prepared it, and the date of release or presentation.

The title should be brief but include three elements: (1) the variables included in the study, (2) the type of relationship among the variables, and (3) the population to which the results may be applied. Redundancies such as "A report of," "A discussion of," and "A study of" add length to title but little else. Single-word titles are also of little value.

Addresses and titles of recipients and writers may also be included.

(For thesis follow the format as prescribed by the relevant university)

Letter of Transmittal: This element is included in relatively formal and very formal reports. Its purpose is to release or deliver the report to the recipient. It also serves to establish some rapport between the reader and the writer. This is one part of the formal report where a personal, or even a slightly informal, tone should be used. The transmittal letter should not dive into report findings except in the broadest terms. This letter may be like:

Virtual University Lahore

December 15, 2006

Mr. K. M. Khalil
Vice President for Marketing
…….
…….

Subject: Report on Employee Satisfaction and Organizational Commitment

Dear Mr. Khalil,

Here is a report on Employee Satisfaction and Organizational Commitment. The report was prepared according to your authorization letter of April 15, 2006.

……
……
……
……

We are grateful to you for your cooperation in this important study.

Sincerely,

……..
……..

Letter of Authorization: This is a letter to the researcher approving the project, detailing who has responsibility for the project and indicating what resources are available to support it. The letter not only shows who sponsored the research but also delineates the original request.

Researcher would not write this letter. In many situations, referring to the letter of authorization in the letter of transmittal is sufficient. If so, the letter of authorization need not be included in the report. In case the letter has to be included, exact copy of the original may be reproduced.

Table of Contents: A table of contents is essential to any report. It should list the divisions and subdivisions of the report with page references. The table of contents is based on the final outline of the report, but it should include first-level subdivisions. For short reports it is sufficient to include only the main divisions. If the report includes many figures and tables, lists of these should immediately follow the table of contents. If lots of abbreviations have been used in the report, give a list of abbreviations, alphabetically arranged, after the list of figures/tables.

Executive Summary: It is vital part of the report. Studies have indicated that most managers always read a report's summary, whereas only a minority read the rest of the report. Thus the only chance a writer may have to make an impact be in summary.

An executive summary can serve two purposes. It may be a report in miniature – covering all the aspects in the body of the report, but in abbreviated form. Or it may be a concise summary of the major findings and conclusions, including recommendations. On the whole the summary briefly tells why the research project was conducted, what aspects of the problem were considered, what the outcome was, and what should be done.

The summary should be written only after the rest of the report is completed. It represents the essence of the report. Two to three pages are generally sufficient for a properly condensed summary. (For very big reports which run into number of volumes, like the one finds in the feasibility reports of big projects, the summary may be very big.) The summary should be written to be self-sufficient. In fact, it is not uncommon for a summary to be detached from the report and circulated by it.

The summary contains four elements:

1. The objectives of the report are stated, including the most important background and specific purposes of the project.
2. The major results are presented. The key results regarding each purpose should be included.
3. The conclusions that are based on the results. There should be logical interpretation of the results which could lead to the stated conclusions.
4. The recommendations or suggestions for action, which are based on the conclusions. The recommendations must logically emerge from the results.

In many cases managers prefer not to have recommendations included in the report or summary. The consultant may have to go by the demand of the client.

Note: In many reports you may see that the executive summary comes first which is followed by the table of contents.

For students writing their thesis, in place of executive summary, they write an abstract of their thesis. This abstract is usually of one or two paragraphs. Abstract has information on the topic, the research problem, the basic findings, and any 'unusual' research design or data collection features.

Main Body

The main body constitutes the bulk of the report. It includes: Introduction, Methodology, Results, Conclusions, and Recommendations of the study.

Introduction: The introduction prepares the reader for the report by describing the parts of the project: background material, the problem statement, and research objectives of the study. In most projects, introduction can be taken from the research proposal submitted earlier by the consultant. The proposal itself was based on the terms of reference (TOR) supplied by the client.

Background could help in looking at the magnitude of the problem. It may include the results of exploration from an experience survey, focus group discussion, and secondary data from literature review. The background includes definitions, qualifications and assumptions. It gives the reader the information needed to understand the remainder of research report.

Problem statement contains the need for the research project. The problem is usually represented by the research question raised by the client. It explains why the project was worth doing.

Research objectives address the purpose of the project. These objectives may be research questions and associated investigative questions. In correlational or causal studies, the hypothesis statement may be included. At the end of the study the researcher may see the extent to which these objectives have been addressed.

For Thesis: After introduction, for **s**tudents writing their thesis, it is recommended that they should have three separate chapters on review of literature, theoretical framework, and hypothesis or research question along with the operationalization of variables. These chapters may be in line with the steps in research that we discussed as part of the research process.

Methodology: Technical procedures for carrying out the study must be explained in a manner appropriate for the reader. It may be useful to supplement the material in this section with more detailed explanation in the appendix. This part of the report should address seven topics:

1. *Research design:* Was the study exploratory, descriptive, or causal? A specific strategy was used to conduct this study. Why was this particular design suited to the study?
2. *Data collection methods:* Did the data come from primary sources or secondary sources? How the primary data were collected – survey, experiment, observation? It is possible that multiple techniques may have been used – all these have to be explained.

3. *Sample design:* What was the target population? What sampling frame was used? What type of sampling was used? What was the selection procedure used?
4. *Instrument(s) of data collection:* What instrument(s) of data collection was (were) used? Why a particular instrument was selected? Include a copy of each instrument in the appendix.
5. *Fieldwork/data collection:* How many and what type of fieldworkers were used? What training and supervision did they receive? How was the quality control assured?
6. *Analysis:* How was the analysis carried out? How was the data reduction handled? Tell about the scoring scheme used. Outline the statistical methods applied for the analysis of the data.
7. *Limitations:* No report is perfect, so it is important to indicate the report's limitations. If there were problems with non-response error or sampling procedures, they should be discussed. The discussion of limitations should avoid overemphasizing the weaknesses. Its aim should be to provide a realistic basis for assessing the results.

Results: The presentation of results will occupy the bulk of the report. This section presents in some logical order those findings of the project that bear on the objectives. The results should be organized as a continuous narrative, designed to be convincing but not oversell the project. Summary tables and charts should be used to aid the discussion. Tables and charts may serve as points of reference to the data being discussed and free the prose from an excess of facts and figures. Comprehensive or detailed charts should be reserved for the appendix.

Conclusions and recommendations: The last part of the body of the report presents the conclusions and recommendations based on results. Findings state facts; conclusions represent inferences drawn from findings. A writer is sometimes reluctant to make conclusions and leaves the task to the reader. Avoid this temptation when possible. As the researcher, you are the one best informed on the factors that critically influence the findings and conclusions.

Recommendations emerge out of conclusions. These are actually suggestions for action in an applied research. The researcher may present several alternatives with justification. In academic research, the recommendations are often further study suggestions that broaden or test understanding of the subject area.
The conclusions and recommendations are presented here in more detail than in the executive summary, with whatever justification is needed.

References: All citations used in the study must be given by arranging them alphabetically by the last name of the author.

For your thesis

For your thesis the following outline of chapters is suggested:

- Introduction
- Review of Literature
- Theoretical Framework
- Hypothesis and Operationalization of Concepts
- Research Design
- Analysis of Data
- Summary, Conclusions, and Recommendations
- References

- Appendixes

Appended Parts

Appendix: The appendix presents the "too …" material. Any material that is too technical or too detailed to go to the body should appear in appendix. This includes materials of interest only to some readers, or subsidiary materials not directly related to the objectives. Some examples of appendix material are data collection forms (instruments), detailed calculations, discussions of highly technical questions, detailed or comprehensive tables of results, and a bibliography (if appropriate).

Lesson 45: REFERENCING

There is a general mix up or referencing with bibliography; though the purposes are different. A **bibliography** is the listing of the works that are relevant to the topic of research interest arranged in alphabetical order of the last names of authors. A **reference** list is a subset of the bibliography, which includes details of all the citations used in literature survey and elsewhere in the report, arranged again, in the alphabetical order of the last names of authors. These citations have the goals of crediting the author and enabling the reader to find the works cited.

Giving references in the report or thesis is a must, whereas the bibliography is additional information and is certainly optional. There should be no mixing up of the meanings.

There are different modes of referencing being followed by different disciplines. Find out what mode is followed in your discipline. For example, psychologists follow the publication manual of American Psychological Association (APA), and sociologists follow guidelines given in the manual of American Sociological Association. Similarly other subjects follow their professional associations. Each of these manuals specifies, with examples, how books, journals, newspapers, dissertations, and other materials are to be referenced in manuscripts. Whichever the style you pick up, follow it consistently. Since APA format is followed for referencing in many journals in management area, we shall present that here as a specimen. All the citations mentioned in the research report should find a place in the References section at the end f the report.

Specimen Format for citing different Types of References

Book by a single author

Leshin, C. B. (1997). *Management on the World Wide Web.* Englewood Cliffs, NJ: Prentice-Hall.
Start with the last name, put a comma and then initials with full stop. It is followed by the year of publication in parentheses with a full stop. Then we have the title of the publication; all in small words (unless there is some name which has to be with capital letter as it is in this title) and in italics. Give full stop at the end. It is followed by place of publication with a colon at the end. After the colon give the name of the publisher. Second line of the reference should be indented by giving five spaces.

Give two spaces for separating the references.

Book by more than one author

Cornett, M., Wiley, B. J., & Sankar, S. (1998). *The pleasures of nurturing.* London: McMunster Publishing.
It is the same as the previous one except there is the use & separating the last author from its preceding one. See it is not written ‘and’ but being used as symbol ‘&.’

Edited book

It is a book of readings or called Reader, which contains sections/articles written by a number of authors. These articles may have been published earlier in different journals/books or these

may have been specially written for this book. Such a book has an editor or editors who collected these articles, edited them and published.
Pennathur, A., Leong, F. T., & Schuster, K. (Eds.) (1998). *Style and substance of thinking*. New York: Wilson Press.

Here after the names of the editors, the word editors is abbreviated as "Eds." And put in parentheses. Other instructions remain the same.

Chapter in an edited book

This is an article written by single or multiple authors and is printed in the edited book.

Riley, T., & Brecht, M. L. (1998). The success in mentoring process. In R. Williams (Ed.) *Mentoring and career success.* pp. 129-150. New York: Wilson Press.

We start with the name(s) of the author(s); same instructions. Then the title of the article published in this edited book. The title is in small letters except the letter of the first word. It is not to be put in italics or in bold. Give full stop at the end of the title. Then we tell about the book and its editor in which it was published. Here the editor's name does not start with the last name, but is kept straight as initials and then the last name. It is followed by the title of the book which is in italics. After the title we specify the pages of the book on which this article appeared. Rest is the same i.e. place of publication and the publisher.

Journal Article

Jean quart, S., & Peluchette, J. (1997). Diversity in the workforce and management models. *Journal of Social Work Studies,* 43 (3), 72-85.

The title of the article is in small letters. The name of the journal is in italics. Such professional journals are well known in the academic community, therefore, the place of publication and the publisher is not given. Instead, it volume and number in the volume is given. All the issues published in one year are one volume. There could be number of issues in a volume. Both the volumes and issues are numbered. In this example 43 is the volume and 3 given in the parentheses is the number in this volume. It is followed by the pages on which this article was published.

Conference Proceedings publications

Gardezi, H. N. (2005). Population policy of Pakistan. In Z. Sathar (Ed.), *Proceedings of the Third Conference on Research and Population,* (pp. 100-107). Islamabad: Population Council.

Doctoral Dissertation

Chaudhary, M.A. (2004). *Medical advances and quality of life.* Unpublished doctoral Dissertation, Virtual University

Paper presented at conference

Qureshi, Q. A. (2005, May 16). *Practical tips for efficient management*. Paper presented at The annual meeting Entrepreneurs, Lahore.

It is possible that the proceeding of a conference have not been published. The researcher got hold of paper that was presented at the conference and wanted to do it citation. Here along with the year of the conference, the date is also given. Title of the paper is in italics. Then give some information about owners of the conference, followed by place where the conference was held.

Unpublished Manuscript

Kashoor, M. A. (2005). *Training and development in the '90s.* Unpublished manuscript, Virtual University.

Newspaper Article

The GM Pact. (2005, May 16). *The Dawn,* p. 4.

Referencing Electronic Sources

Ahmad, B. (2005). Technology and immediacy of information. [On line]
Available http://www.bnet.act.com

Just giving the site on the internet is not sufficient. It is necessary that the name of the author and title of the writing should be given. Internet site is actually in place of the publisher and the place of publication.

Referencing and quotation in Literature review

Cite all references in the body of the report using the author-year method of citation; that is, the last name of the author(s) and the year of publication are given at the appropriate places. Examples of this are as follows:

a. Rashid (2005) has shown …

b. In recent studies of dual earner families (Khalid, 2004; Hameed, 2005) it has been ….

c. In 2004, Maryam compared dual earner and dual career families and found that ….

As can be seen from the above, if the name of the author appears as part of the narrative as in the case of (a), the year of publication alone has to be cited in parentheses. Note that in case (b), both the author and the year are cited in parentheses, separated by comma. If the year and the author are part of the textual discussion as in (c) above, the use of parentheses is not warranted.

Note also the following:

1. Within the same paragraph, you need not include the year after the first citation so long as the study cannot be confused with other studies cited in the article. An example of this is: Gutek (1985) published her findings in the book titled *Sex and the Workplace*. Gutek indicated …
2. When the work is authored by two individuals, always cite both names every time the reference occurs in the text.
3. When a work has more than two authors but fewer than six authors, cite all authors the first time the reference occurs, and subsequently include only the last name of the first author followed by "et al." as per example below:
   Sekaran, U., Martin, T., Trafton, N., and Osborn R. N. (1980) found … (first citation)
   Sekaran et al. (1980) found … (subsequent citations)
4. When a work is authored by six or more individuals cite only the last name of the first author followed by 'et al.' and the year for the first and subsequent citations. Join the names in a multiple-author citation in running text by the word "and." In parenthetical material, in tables, and in reference list, join the names by an ampersand (&). Examples are given below:
   a. As tucker and Snell (1989) pointed out …
   b. As has been pointed out (Tucker & Snell, 1989) …
5. When a work has no author, cite in the text the first two or three words of the article title. Use double quotation marks around the title of the article. For example, while referring to the newspaper article, the text might be read as: While examining unions ("with GM pact," 1990).
6. When a work's author is designated as "Anonymous," cite in the text, the word *Anonymous* followed by a comma and the date: (Anonymous, 1979). In the reference list, an anonymous work is alphabetized by the word *Anonymous.*
7. When the same author has several works published in the same year, cite them in the same order as they occur in the reference list, with the in-press citations coming last. For example: Research on the mental health of dual-career family members (Sekaran, 1985a, 1985b, 1985c, 1999, in press) indicates …
8. When more than one author has to be cited in the text, these should be in alphabetical order of the first author's last name, and the citations should be separated by semicolons as per illustration: In the job design literature (Aldag & Brief, 1976; Alderfer, 1972; Beatty, 1982; Jeanquart, 1998) …

Personal communication through letters, memos, telephone conversations, and the like, should be cited in the text only and not included in the reference list since these are not retrievable data. In the text, provide the initials as well as the last name of the communicator together with date, as in the following example:
R. Qureshi (personal communication, November 15, 2006) feels …

Quotations in Text

Quotations should be given exactly as they appear in the source. The original wording, punctuation, spellings, and italics must be preserved even if they are erroneous. The citation of the source of direct quotation should always include the page number(s) as well as the reference.

Use double quotation marks for quotations in the text. Use single quotation marks to identify the material that was enclosed in double quotation marks in the original source. If you want to emphasize certain words in the quotation, underline them and immediately after the underlined

words, insert within brackets the words: *italics added.* Use three ellipsis points (…) to indicate that you have omitted material from the original source.

If the quotation is more than 40 words, set in a free-standing style starting on a new line and indenting the left margin a further five spaces. Type the entire quotation double spaced on the new margin, indenting the first line of paragraphs from the new margin.

If you intend publishing an article in which you have quoted extensively from a copyright work, it is important that you seek written permission from the owner of the copyright. Make sure that you also footnote the permission obtained with respect to the quoted material. Failure to do so may result in unpleasant consequences, including legal action taken through copyright protection laws.

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