

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).

Correlational 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 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.*
7. *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:

1. **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.
2. **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.

3. **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.
4. **Theoretical reviews** compare how different theories address an issue. It present different theories that purport to explain the same thing, 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.
5. **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.
6. **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 begin 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 published in scholarly journals. These journals are three vehicles of communication in science. There are dozens of journal, 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. Some times 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 reflect 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 ready made 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:

1. **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.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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

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 every day 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:

1. *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.

2. *Talk over ideas with others.*

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

3. *Apply to a specific context.*

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

4. *Define the aim or desired outcome of the study.*

- a. Will the research question be for an exploratory, explanatory, or descriptive study.
- b. 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 of 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**

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 researchers, 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 be 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 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: Observation 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.

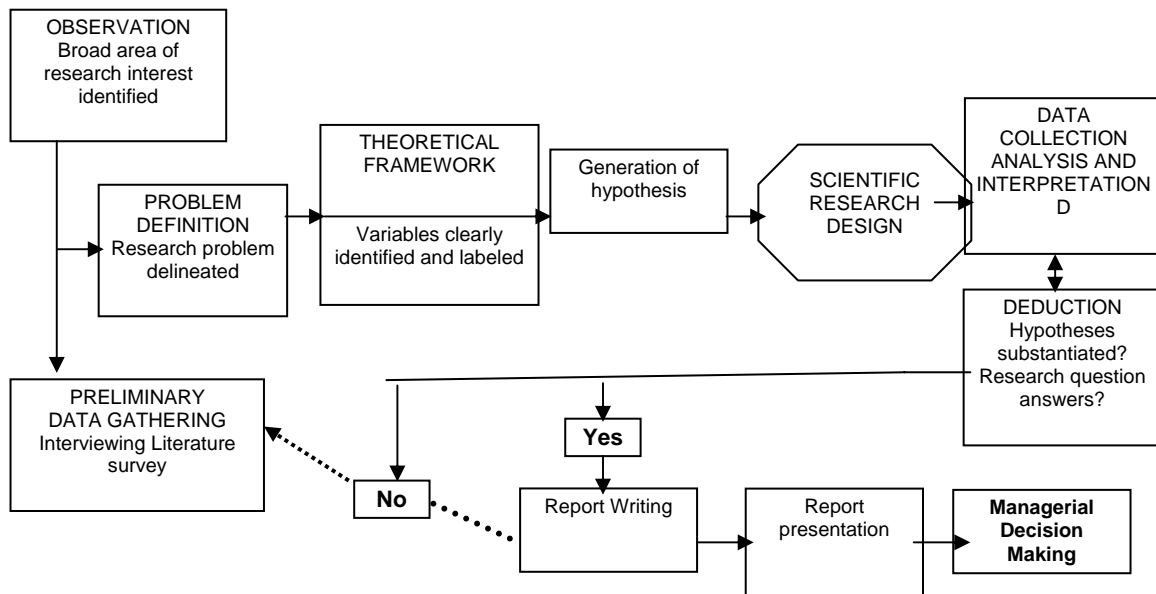
9. Report Writing

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 thee 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

