**Research Methodology(RM)**

**Name :** \_Mohammd \_Numan\_(Sarwary)\_\_\_\_\_\_\_\_\_\_\_

**F/Name** : \_Haji\_Painda \_Mohammd\_\_\_\_\_\_\_\_

**Subject :** \_Research \_Methodology\_(RM)\_\_\_\_\_\_\_\_

**Teacher :** \_Sir\_Khiber\_\_(Humdard)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chapter \_ 1**

**Introduction to Research**

**Instructor : Khyber khan humdard**

**Research**

Gathering information needed to answer a question and there by help in solving a problem **OR**

The word research is composed of two syllables “Re” and “Search” Re is the prefix meaning Again or over again or a new and Search is the latter meaning to examine closely and carefully or to test and try . together they form a careful systematic study and investigation in some field of knowledge undertaken to establish principles / policies.

Research is simple the process of finding solution to a problem after through study and analysis of the situation factors. It is gathering information needed to answer a question and there help in solving a problem.

**Research can also be defined as**

* Search for knowledge.
* Systematic and scientific search for getting relevant answer on any up specific topic.
* Scientific enquiry into a subject.
* Research is a movement from unknown to known .

**Research method**

* **Research Methods may be understood as all those methods or techniques that are used by a researcher for conducting a research depending upon the methods. 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(په چټکۍ سره) decision-making environment.**

**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 (آزمائش) his or her mind.**
* **For example, in a recent BCS examination of the 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 diagnose the situation, and the recommendations to be applied to overcome the undesirable (ناڅاپه)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(شوقین) 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 research 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 (انجمن)is self-satisfying.**

**Cont…..**

* **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(سماجی)) level. 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;**

1. **Selecting and implementing a course of action; and**
2. **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.**

**Characteristics of research**

* **It is a scientific investigation. Research (research) means to "search again". It connotes(ژباړه) patient study and scientific investigation.**
* **It develops concepts and the theories. One reason for conducting research is to develop and evaluate concepts and the theories.**
* **It expands the limits of knowledge. The basic or pure research attempts to expand the limits of knowledge. It is conducted to verify the acceptability of a given theory or to know more about a certain concept.**
* **It cannot be implemented immediately. It does not directly involve the solution to a particular problem; its findings generally cannot be implemented immediately.**
* **It is an essential tool for good decision making. The task of educational research is to make the information used in decision making more accurate.**
* **Educational research is a managerial tool that provides information essential for good decision making. Research in teaching, training, organizing, or management areas of an institution are within the scope of training research.**
* **Educational research reduces the risk of making wrong decisions.**

**Aims and objectives of research**

Its main aim is to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose, research objectives may fall  into a number of following broad groupings: ·

* To gain familiarity with a phenomenon (پړاونه)or to achieve new insights into it. (Exploratory or formulating research studies)
* To portray(پیش کرنا) accurately the characteristics of a particular individual, situation or a group. (Descriptive research studies)
* **T**o determine the frequency with which something occurs or with which it is associated with something else. (Diagnostic research studies)
* To test a hypothesis(نظریہ) of a causal relationship between variables.(hypothesis-testing research studies)

**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:***

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

**PURPOSE OF DOING RESEARCH**

* To discover answers to questions through application of scientific procedures OR
* If we ask someone why he or she is conducting (ترسره کول)a study, we might get a range of responses: “My boss told me to do”; “It was a class assignment”; “I was curious(شوقین).” 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.

**1. A. EXPLORATORY/FORMULATIVE RESEARCH:**

Cont….

* It is preliminary study of an unfamiliar problem about which researcher has little or no knowledge.
* The objective of exploratory(توضیحات) research is the development of hypothesis rather than their testing. OR
* 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 began 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(منظم) and extensive study.
* Initial research conducted(ترسره شوی) 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(سخته), more conclusive(جامع) future study will not begin with an inadequate(ناکافي) understanding of the nature of the management problem. The findings discovered through exploratory research would the researchers to emphasize(ټینګار کوي) learning more about the particulars of the findings in subsequent(وروسته)conclusive studies.
* Exploratory research rarely yields definitive (باوري)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 exploratoryresearch.
* Initial research conducted(ترسره شوی) 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(سخته), more conclusive(جامع) future study will not begin with an inadequate(ناکافي) understanding of the nature of the management problem. The findings discovered through exploratory research would the researchers to emphasize(ټینګار کوي) learning more about the particulars of the findings in subsequent(وروسته)conclusive studies.
* Exploratory research rarely yields definitive (باوري)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(حقایق), setting, and concerns;

2. Develop well-grounded picture of the situation;

3. Develop tentative theories(تخنیکي نظریات); generate new ideas, conjectures, or hypotheses;

4. Determine the feasibility (امکانات)of conducting (تعین)the study;

5. Formulate questions and refine issues for more systematic inquiry; and

6. Develop techniques and a sense(احساس) of direction for future research.

1. **B. DESCRIPTIVE RESEARCH:**

* Descriptive (تشریحات) 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(سرشمیرنه), and Educational Census(د زده کړې شمیرنه) 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.
* The descriptive research is used when we make list and report.
* **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?

**1. 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(وجوہات) and reasons(لاملونه).
* 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(وسیع) 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, and new topics:

7. Provide evidence(شواهد) to support or refute(رد کړئ) an explanation or prediction.

**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.

**2 A. Basic Research Basic / Pure /Fundamental Research**

* To improve our understanding about problems. Research done chiefly to enhance the understanding of certain problems that commonly occur in organizational setting and seek method of solving them. To generate a body of knowledge by trying to comprehend how certain problems that occur in organizations can be solved.
* 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.
* In fundamental research we gather the information
* 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.

**2B. Applied Research:**

* “To solve the current problem”
* Research done with intention of applying the results of the finding to solve specific problems currently being experienced in the organization is called 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.

1. **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 lets 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:

3 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 advantage 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.

**3 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.

**WHY SHOULD A MANAGER KNOW RESEARC**

* Facilitates good decision making.
* Become able to discriminate(امتیاز) about research findings.
* Prevents vested (personal) interests
* Educates to share pertinent/ significant and relevant information with researcher
* Help for calculation of risks and probabilities attached.
* Understand the complexity of the variables(متغیراتو) in organization.
* Integrate research with profession.
* Hire /select researcher /consultant more effectively

***The Manager –Researcher Relationship:***

* Each should know his /her role.
* Trust level
* Value system
* Acceptance of findings and implementation
* Issues of inside versus outside researchers

**INTERNAL RESEARCHERS:**

***Advantages:***

* Better acceptance from staff
* Knowledge about organization
* Would be an integral part of implementation and evolution of the research recommendations.

***Disadvantages:***

* Less fresh ideas
* Power politics could prevail(غالب)
* Possibility not valued as “experts” by staff.

**EXTERNAL RESEARCHERS:**

***Advantages:***

* Divergent and convergent thinking
* Experience from several situations in different type of organizations.
* Better technical training, usually.

***Disadvantages :***

* Take time to know and understand the organizational system.
* Rapport and corporation from staff not only easy.
* Not available for evaluation after implementation cost.

**END OF CHAPTER \_\_\_\_\_\_\_\_\_\_1**

Chapter 2 :

**SCIENTIFIC INVESTIGATION**

**Definition of scientific research**

**Scientific research focusing on solving problems and pursues(تعقیب)**

a step by step logical, organized and rigorous(سخت)method to identify the problems, gather data analyze them and draw valid conclusion there from.

**Why scientific research?**

* Enables all those who are interested and knowing about the same or similar issues to come up with comparable findings when data are analyzed.
* Findings are accurate and confident.
* Apply solution to similar problems.
* Highly the most critical factors at the work place that need specific attention to solve or minimize problems.
* Scientific investigation and managerial decision making are integral part of effective problem solving.
* It can be applied to both basic and applied research.

**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 measure 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 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 statues is a variable it can take five 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.

**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(عکاسی) the presence or absence of a property: employed-unemployed or male-female have two values. These variables are referred to as dichotomous(0/1). 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.

**Dependent variable:**

* A dependent variable is the variable being rested in a scientific experiment.
* The dependent variable is dependent on the independent variable. As the experimenter changes the independent variable. The changes in the dependent variable is observed and recorded. When you take data in an experiment, the dependent variable is the one being measured.

**Dependent variable examples**

* A scientist is testing the effect of light and dark on the behavior of moths by turning a light on and off. The [independent variable](https://www.thoughtco.com/what-is-an-independent-variable-606110) is the amount of light and the moth's reaction is the [dependent variable](https://www.thoughtco.com/what-is-a-dependent-variable-606108).  A change in the independent variable (amount of light) directly causes a change in the dependent variable (moth behavior).
* You are interested in learning which kind of chicken produces the largest eggs. The size of the eggs depends on the breed of chicken, so breed is the independent variable and egg size is the dependent variable.

**Graphing the dependent varible**

* When you graph data, the independent variable is on the x-axis, while the dependent variable is on the y-axis. You can use [the DRY MIX acronym](https://www.thoughtco.com/dry-mix-experimental-variables-acronym-609095) to remember this:
* D - dependent variable  
  R - responds to change  
  Y - Y-axis

M - manipulated variable (one you change)  
I - independent variable  
X - X-axis

**Independent variable**

* The [independent variable](http://www.thoughtco.com/definition-of-independent-variable-605238) is the condition that you change in an experiment. It is the variable you control.
* It is called *independent* because its value does not depend on and is not affected by the state of any other variable in the experiment.
* Sometimes you may hear this variable called the "controlled variable" because it is the one that is changed. Do not confuse it with a "control variable," which is a variable that is purposely held constant so that it can't affect the outcome of the experiment.

**Independent variable examples**

* A scientist is testing the effect of light and dark on the behavior of moths by turning a light on and off. The [independent variable](https://www.thoughtco.com/what-is-an-independent-variable-606110) is the amount of light and the moth's reaction is the [dependent variable](https://www.thoughtco.com/what-is-a-dependent-variable-606108).
* In a study to determine the effect of temperature on plant pigmentation, the independent variable (cause) is the temperature, while the amount of pigment or color is the dependent variable (the effect).

**Independent and dependent variable example**

* In a study to determine whether how long a student sleeps affects test scores, the independent variable is length of time spent sleeping while the dependent variable is the test score.
* You want to compare brands of paper towels, to see which holds the most liquid. The independent variable in your experiment would be the brand of paper towel. The dependent variable would be the amount of liquid absorbed by a paper towel.
* If you want to know whether caffeine affects your appetite, the presence/absence of amount of caffeine would be the independent variable. How hungry you are would be the dependent variable.

**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.

**Relationship among variable**

* It is very important to understand relationship between variables to draw the right conclusion from a statistical analysis. The relationship between variables determines how the right conclusions are reached. Without an understanding of this, you can fall into many pitfalls that accompany statistical analysis and infer wrong results from your data.
* There are several different kinds of relationships between [variables](https://explorable.com/research-variables). Before [drawing a conclusion](https://explorable.com/drawing-conclusions), you should first understand how one variable changes with the other. This means you need to establish how the variables are related - is the relationship linear or quadratic or inverse or logarithmic or something else?
* Suppose you measure a volume of a gas in a cylinder and measure its pressure. Now you start compressing the gas by pushing a piston all while maintaining the gas at the room temperature. The volume of gas decreases while the pressure increases. You note down different values on a graph paper.
* 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.

End of chapter \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2