RESEARCH METHODOLOGY

# Definition of Research Methodology:

“Research methodology refers to the procedures used in making systematic observations or otherwise obtaining data, evidence, or information as part of a research project or study. It defines what the activity of research is, how to proceed, how to measure progress, and what constitutes success.” – Sikkim Manipal University\_MB0050

# Definition of Research:

Fred Kerlinger (1986) stated that ‘Scientific research is a systematic, controlled and critical investigation of propositions about various phenomena.’

"Management Research is an unbiased, structured, and sequential method of enquiry, directed towards a clear implicit or explicit business objective" - Sikkim Manipal University\_MB0050

# Problems faced in doing a Research:

# Difference between Search and Research:

Research must be a structured approach that you need to follow, and then only will it be called scientific.

# Types of Research:

## Based on \_\_\_\_\_\_\_\_\_\_

### Fundamental or Basic Research

Studies that are conducted for academic reasons and do not have immediate applicability.

### Applied Research

Studies that are related to specific problems and are conducted to find solutions.

## Based on nature of enquiry or Objectives:

### Exploratory Research

### Conclusive Research

## Based on nature of investigation required Conclusive Research can be further sub divided into:

### Descriptive Research

### Casual research

# The Research Process:

While conducting research, information is gathered through a sound and scientific research process.

Figure \_\_\_\_\_\_\_\_\_ illustrates the a Model Research Process

Sampling Plan

Hypothesis: The assumption about the expected results of the research. It is the tentative assumption made in order to draw out and test its logical or empirical consequences.

Postulate: Something taken as true or factual and used as the starting point for a course of action.

# Application of Research:

Research is crucial in the following arrears of business:

1. Marketing Function:
2. Personal and Human Resource Management:
3. Financial and Accounting Research:
4. Production and Operations Management:

# Features of a Good Research Study:

1. It must have a clearly stated purpose. This not only refers to the objective of the study, but also precise definition of the scope and domain of the study.
2. It must follow a systematic and detailed plan for investigating the research problem. The systematic conduction also requires that all the steps in the research process are interlinked and follow a sequence.
3. The selection of techniques of collecting information, sampling plans and data analysis techniques must be supported by a logical justification about why the methods were selected.
4. The results of the study must be presented in an unbiased, objective and neutral manner.
5. The research at every stage and at any cost must maintain the highest ethical standards.
6. The reason for a structured, ethical, justifiable and objective approach is the fact that the research carried out by you must be replicable. This means that the process followed by you must be ‘reliable’, i.e., in case the study is carried out under similar conditions it should be able to reveal similar results.

# Defining the Research Problem:

# Management Decision Problems Vs Management Research Problems:

# Problem Identification Process:

The process of **Identifying the research problem** involves the following steps:

1. Management Decision Problem identification:
2. Discussion with experts in the specific field:
3. Review of existing literature:
4. Information derived from Organizational analysis:
5. Small exploratory qualitative survey:
6. Management research problem:
7. Theoretical foundation and model building:
8. Statement of research objectives:
9. Formulation of research hypothesis:

Literature Review: It is a comprehensive collection of information obtained from published and unpublished sources of data in the specific area of interest to the researcher. This may include journals, newspapers, magazines, reports, government publications, and also computerized database.

Variable: A variable is any is any concept that varies and we can assign numerical and values.

# Formulating of Research Hypothesis:

Any assumption that the researcher makes on the probable direction of the results that might be obtained on completion of the research process is termed as a hypothesis.

Kerlinger (1986) defines a hypothesis as ‘a conjectural statement of the relationship between two or more variables.’

According to Grinnell (1993), ‘A hypotheses is written in such a way that it can be proven or disproven by valid and reliable data—it is in order to obtain these data that we perform our study’.

## Criteria that the researcher must fulfill while designing any hypotheses:

1. A hypothesis must be formulated in simple, clear, and declarative form. A broad hypothesis might not be empirically testable. Thus, it might be advisable to make the hypothesis one-dimensional, and to be testing only one relationship between only two variables at a time.
2. A hypothesis must be measurable and quantifiable.
3. A hypothesis is a conjectural statement based on the existing literature and theories about the topic and not based on the gut feel of the researcher.
4. The validation of the hypothesis would necessarily involve testing the statistical significance of the hypothesized relation.

## Types of Research Hypothesis:

Descriptive Hypothesis

Relational Hypothesis:

# Writing a Research Proposal:

It is a framework or detailed plan that presents the research objectives, design of achieving these objectives, and the expected outcomes/deliverables of the study on a formal document in a well presented manner.

## Contents of a research Proposal:

1. Executive summary
2. Background of the problem
3. Problem Statement and research objectives
4. Research design
5. Scheduling the research
6. Results and outcomes of the research
7. Costing and budgeting the research

# Research Design

Green et al. (2008) defines research design as ‘the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern or framework of the project that stipulates what information is to be collected from which sources by what procedures. If it is a good design, it will ensure that the information obtained is relevant to the research questions and that it was collected by objective and economical procedures.’

Thyer (1993) states that, ‘A traditional research design is a blueprint or detailed plan for how a research study is to be completed—operationalizing variables so they can be measured, selecting a sample of interest to study, collecting data to be used as a basis for testing hypotheses, and analyzing the results.’

Sellitz et al. (1962) state that, ‘A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.’

Kerlinger (1995) ‘A plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. The plan is the complete scheme or programme of the research. It includes an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data.’

# Exploratory Research Design:

## Secondary Resource Analysis

## Case Study Method

## Expert Opinion Survey

## Focus Group Discussions

# Descriptive Research Design:

## Cross Sectional Studies

## Longitudinal Studies

# Experimental Designs

In an experiment, a researcher actively manipulates one or more causal variables and measures their effects on the dependent variables of interest. In this design type one can only infer a cause-and-effect relationship.

The necessary conditions for making causal inferences are:

1. Concomitant variation - implies that cause and effect variables should have a high correlation
2. Time order of occurrence of variables - means that causal variable must occur prior to or simultaneously with the effect variable
3. Absence of other possible causal factors - means that all other variable except the one whose influence we are trying to study should be absent or kept constant.

There are two conditions that should be satisfied while conducting an experiment. These are:

1. Internal validity
2. External validity

## There are four types of experimental designs. These are explained below:

### Pre-experimental designs:

There are three designs under this.

1. One short case study where observation is taken after the application of treatment
2. One group pretest-posttest design where one observation is taken prior to the application of treatment and the other one after the application of treatment.
3. Static group comparison, where there are two groups – experimental group and control group. The experiment group is subjected to treatment and a posttest measurement is taken. In the control group measurement is taken at the time when it was done for experimental group.

### Quasi-experimental designs:

### True experimental designs:

### Statistical designs:

1. Completely randomized design:
2. Randomized block design:
3. Factorial design:

Types of Research Data

# Primary Data:

Data which is research/project specific, directly collected & compiled by the researcher or investigative body. The accuracy and relevance is reasonably high.

## Observation Method

Observation is a direct method of collecting primary data. It is one of the most appropriate methods to use in case of descriptive research. The method of observation involves viewing and recording individuals, groups, organizations or events in a scientific manner in order to collect valuable data related to the topic under study. The mode of observation could be in a standardized and structured observation or The opposite of this is called the unstructured observation.

The observation could be done by a human observer or a mechanical device.

1. Human Observation
2. Mechanical Observation

* Cameras
* Universal Product Code (UPC)
* Psych galvanometer, which measures galvanic skin response (GSR) or changes in the electrical resistance of the skin.
* Eye-tracking equipment such as oculometers, eye cameras or eye view minuters, record the movements of the eye.
* Trace analysis

## Focus Group Discussion

Size : Ideal size of the group discussion is 8 to 12 members.

Nature : Similar background in terms of demographic and psychographic traits.

## Personal Interview Method

# Types of Measurement scale

There are four types of measurement scale:

1. Nominal Scale
2. Ordinal Scale
3. Interval Scale
4. Ratio Scale

## Nominal Scale:

Here, numbers are assigned for the purpose of identification of the objects. Any object which is assigned a higher number is in no way superior to the one which is assigned a lower number. Each number is assigned to only one object and each object has only one number assigned to it. The assigned numbers cannot be added, subtracted, multiplied or divided. The only arithmetic operations that can be carried out are the count of each category. Therefore, a frequency distribution table can be prepared for the nominal scale variables and mode of the distribution can be worked out. One can also use chi-square test and compute contingency coefficient using nominal scale variables.

## Ordinal Scale:

An ordinal scale measurement tells whether an object has more or less of characteristics than some other objects. However, it cannot answer how much more or how much less. In the ordinal scale, the assigned ranks cannot be added, multiplied, subtracted or divided. One can compute median, percentiles and quartiles of the distribution. The other major statistical analysis which can be carried out is the rank order correlation coefficient, sign test. All the statistical techniques which are applicable in the case of nominal scale measurement can also be used for the ordinal scale measurement.

## Interval Scale:

Revocation