TOPIC ONE – INTRODUCTION TO RESEARCH METHODS

BACKGROUND

In the 3rd millennium the role of research in development will be more important than ever before.
More and more interests is given to research on issues that affect man and his natural environment such as environmental pollution, the quest for economic development, social and political upheavals and the scarcity of natural resources.
The role of research on developmental issues keeps on growing and many governments have recognized that there is a link between national development and research.

MEANING

1. To research is to carry out a diligent inquiry or a critical examination of a given phenomenon. It is an extensive study, investigation or experimentation which follows a logical sequence.
2. It is a process of arriving at effective solutions to problems through systematic collections, analysis and interpretation of data.
3. It involves a critical analysis of existing conclusions or theories with regard to newly discovered facts. That is it creates new possibilities in an ever changing world.

PURPOSE FOR RESEARCH

1. To discover new knowledge
2. To describe a phenomenon
3. To enable prediction
4. To enable control

This is the ability to regulate a phenomenon under study. It is done by manipulating one phenomenon in order to exert control over another one.

5. To enable the explanation of phenomenon.
6. To enable theory development.

This means formulating concepts, laws and generalization about a given phenomenon.

Why Managers need Better Information

- Explosive growth and influence of the internet
- Stakeholders demanding greater influence
- More vigorous competition
- More government intervention
- More complex decisions
- Maturing of management as a group of disciplines
- Greater computing power and speed
- New perspectives on established research methodologies
- Global and domestic competition is more vigorous
- Workers, shareholders, customers and the general public are demanding to be included in company decision-making.
- Organizations are increasingly practicing data mining and data warehousing.
- The power and ease of use of today's computers to analyze data, which help in decision-making.
- There are more variables to consider in every decision.
- More knowledge exists in every field of management.

Sources of Knowledge

- Research

- Experience: Empiricists attempt to describe, explain, and make predictions through observation.
- Tradition: Rationalists believe all knowledge can be deduced from known laws or basic truths of nature
- Authority: They serve as important sources of knowledge, but should be judged on integrity and willingness to present a balanced case.
- Intuition: it is the perception, explanation or insight into phenomena by instinct.

The Value of Acquiring Research Skills

- To gather more information before selecting a course of action
- To do a high-level research study
- To understand research design
- To evaluate and resolve a current management dilemma
- To establish a career as a research specialist

Definition of basic terms used in research

- **Population:** it refers to an entire group of individuals, events or objects having a common observable characteristic.
- **Sample:** It is a smaller group obtained from the accessible population.
- **Sampling:** It is the process of selecting a number of individuals for a study in such a way that the individuals selected represent the population.
- **Variable:** It is a measurable characteristic that assumes different values among the subjects. They can be dependent, independent, intervening, confounding or antecedent variables.
- **Data:** refers to all information a researcher gathers for his or her study. Can be secondary data or primary data.
- **Parameter**: It is a characteristic that is measurable and can assume different values in the population.
- **Statistics:** it is the science of organizing, describing and analyzing data. Descriptive and inferential statistics.
- **Objective:** it refers to the specific aspects of the phenomenon under study that the researcher desires to bring out at the end of the research study.
- **Literature review:** It involves locating, reading and evaluating reports of previous studies, observations and opinions related to the planned study.
- **Hypothesis:** It is a researcher's anticipated explanation or opinion regarding the result of the study.
- **Theory:** It is a set of concepts or constructs and the interrelations that are assumed to exist among those concepts. It provides the basis for establishing the hypothesis to be tested in the study.
- **A *construct*** is an image or idea specifically invented for a given research and/or theory-building purpose
- **A *concept*** is a bundle of meanings or characteristics associated with certain events, objects, conditions, situations, and behaviors. Concepts have been developed over time through shared usage

Components of research

1. Identification of the research area and topic.
2. Statement of the problem.
3. Literature review.
4. Methodology design
5. Sampling frame and sampling techniques.
6. Data collection tools, design and techniques.
7. Data analysis methods.
8. Report writing techniques.

RELATIONSHIP BETWEEN RESEARCH AND SCIENCE

Science is a study of facts. Scientific research is a combination of research and science.

Scientific research is a systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomenon.
It is a critical examination or inquiry to discover facts.
On the other hand science is a systematic knowledge of natural or physical phenomenon, truth ascertained by observations, experiments and induction, ordered arrangement of facts known under classes or head.
Scientific method attempts to achieve a systematic interrelationship of facts by:

- Experimentation
- Observations
- Logical arguments

It is based on the following principles

1. It relies on empirical evidence (experience or direct observation).
2. It utilizes relevant concepts (meaningful).
3. It is committed to objective considerations (outside a researcher's attitudes and emotions).
4. It aims at making adequate and correct statements about population.
5. It results into probable predictions.
6. It is capable of being verified.
7. It aims at formulating most general scientific theories.

Therefore, research and science are both concerned with the discovery of new facts.
In research facts are collected to serve a useful purpose.
The focus is on application while in science facts are collected with the sole purpose of testing or developing theories.
Therefore research +scientific method = scientific research

SCIENTIFIC RESEARCH
It is a systematic, controlled empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomenon.
This means that in effect scientific investigations can have critical confidence in the research outcome.
A scientific investigation is empirical. If a scientist believes that something is so he must somehow or the other put his belief to test outside of himself. (This means that subjective belief must be checked against objective belief).

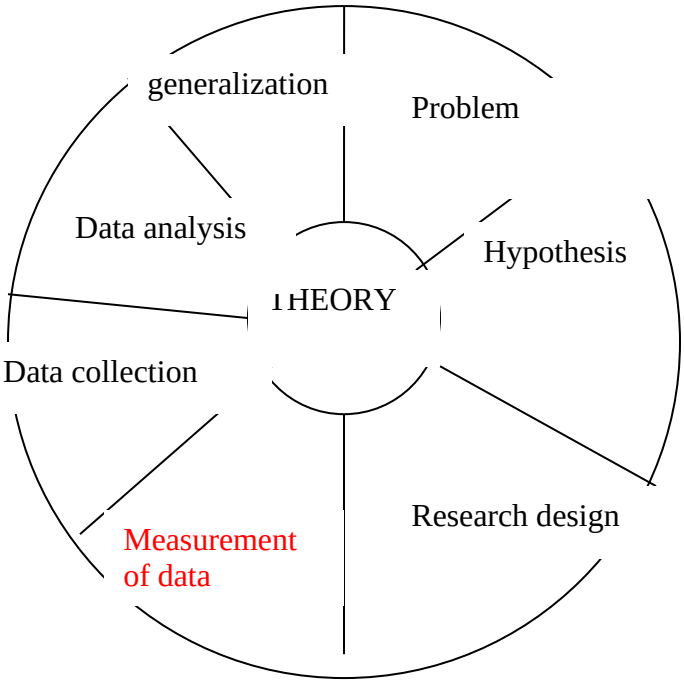
CHARACTERISTICS OF SCIENTIFIC RESEARCH

1. There must be a control group.
2. There must be an experiment group.
3. There must be random assignment of variables.
4. There must treatment.
5. There must be manipulation of independent variable.
6. There must be a hypothesis that can be tested

REASEARCH PROCESS
It is the overall scheme of activities in which scientist engage in in order to produce knowledge. It is a paradigm of scientific inquiry. The research process is cyclic in nature.
It usually starts with a problem and ends within a tentative empirical generalization.
This generalization ending is the beginning of the next cycle.

It consists of the following stages:

The stages



RESEARCH PROCESS

1. Formulating the research topic.
2. State the purpose.
3. State the objectives.
4. Conduct an extensive literature review.
5. Develop hypothesis.
6. Prepare the research design.
7. Determine the sample design.
8. Measure data.
9. Collect data.
10. Process and analysis and interpretation of data.
11. Test the hypothesis.
12. Generalization.
13. Report writing.

TYPES OF RESEARCH

Different authors have classified research into various categories.

Qualitative research

It includes designs, techniques and measures that do not produce discrete numerical data. Qualitative data can be collected through direct observation, participant observation or interview method.

Quantitative research

It includes designs, techniques and measures that produce discreet numerical or quantifiable data.

Advantages of using both qualitative and quantitative methods

1. Since in many cases a researcher has several objectives, some of these objectives are better assessed using quantitative methods.
2. Both methods supplement each other i.e. qualitative methods provide the in-depth explanations while quantitative methods provide the data needed to test hypotheses.
3. Since both methods have a bias, using both types of research helps to avoid such bias in that each method can be used to check the other.

Disadvantages of using both qualitative and quantitative methods

1. It is expensive
2. Researchers may not have sufficient training in both methods to be able to use them effectively.

Classification by purpose

1. **Basic / Pure / Fundamental Research**

   Basic researchers are interested in deriving scientific knowledge i.e. they are motivated by intellectual curiosity and need to come up with a particular solution. It focuses on generating new knowledge in order to refine or expand existing theories. It does not consider the practical application of the findings to actual problems or situations.

2. **Applied research**

   It is conducted for the purpose of applying or testing theory and evaluating its usefulness in solving problems. It provides data to support a theory, guide theory revision or suggest the development of a new theory.

3. **Action research**

   It is conducted with the primary intention of solving a specific, immediate and concrete problem in a local setting e.g. investigating ways of overcoming water shortage in a given area. It is not concerned with whether the results can be generalized to any other setting.

4. **Evaluation Research**

   It is the process of determining whether the intended results were realized.

Types of evaluation research

i. ***Needs assessment***

A need is a discrepancy between an existing set of conditions and a desired set of conditions. The results of needs assessment study provide the foundation for developing new programmes and for making changes in existing ones.

ii. ***Formative evaluation***

Helps to collect data about a programme while it is still being developed e.g. an educational programme, a marketing strategy etc.

iii. ***Summative evaluation***

It is done after the programme has been fully developed. It is conducted to evaluate how worthwhile the final programme has been especially compared to similar programmes.

Classification by methods of analysis

1. **Descriptive research**

   It is the process of collecting data in order to test hypotheses or to answer questions concerning the current status of the subjects in the study. It determines and reports the way things are. It attempts to describe such things as possible behaviour, attitudes, values and characteristics.

Steps involved in descriptive research

- Formulating the objectives of a study
- Designing the methods of data collection
- Selecting the sample
- Data collection
- Analyzing the results

2. **Causal-comparative research**

It is used to explore relationships between variables. It determines reasons or causes for the current status of the phenomenon under study. The variables of interest cannot be manipulated unlike in experimental research.

Steps in causal-comparative research

- Define the research question
- Select a group that possesses the characteristics, which the researcher wants to study.
- Select a comparison group which does not display the characteristics under study but which is similar to the group in other respects.
- Collect data on both the experimental and control groups
- Analyze the data

Advantages of causal-comparative study

- Allows a comparison of groups without having to manipulate the independent variables
- It can be done solely to identify variables worthy of experimental investigation
- They are relatively cheap.

Disadvantages of causal-comparative study

- Interpretations are limited because the researcher does not know whether a particular variable is a cause or result of a behaviour being studied.
- There may be a third variable which could be affecting the established relationship but which may not be established in the study.

3. Correlation Methods

It describes in quantitative terms the degree to which variables are related. It explores relationships between variables and also tries to predict a subject's score on one variable given his or her score on another variable.

Steps in correlational research

- Problem statement
- Selection of subjects
- Data collection
- Data analysis

Advantages of the correlational method

- Permits one to analyze inter-relationships among a large number of variables in a single study.
- Allows one to analyze how several variables either singly or in combination might affect a particular phenomenon being studied.
- The method provides information concerning the degree of relationship between variables being studied.

Disadvantages of the correlational method

- Correlation between two variables does not necessarily imply causation although researchers often tend to interpret such a relationship to mean causation.
- Since the correlation coefficient is an index, any two variables will always show a relationship even when commonsense dictates that such variables are not related.
- The correlation coefficient is very sensitive to the size of the sample.

Classification by type of research

1. Survey Research

A survey is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables. Survey study is therefore a self-report study, which requires the collection of quantifiable information from the sample. It is a descriptive research.

Steps involved in Survey research

- Problem statement
- Defining Objectives
- Selecting a Sample
- Preparing the instruments
- Data analysis

Purpose of survey research

i. It seeks to obtain information that describes existing phenomena by asking individuals about their perceptions, attitudes, behaviour or values.
ii. Can be used for explaining or exploring the existing status of two or more variables, at a given point in time.
iii. It is the most appropriate to measure characteristics of large populations.

Limitations of Survey research

i. They are dependent on the cooperation of respondents.
ii. Information unknown to the respondents cannot be tapped in a survey e.g. amount saved per year
iii. Requesting information which is considered secret and personal, encourages incorrect answers.
iv. Surveys cannot be aimed at obtaining forecasts of things to come.

2. Historical research

Involves the study of a problem that requires collecting information from the past.

Purpose of Historical Research

- Aims at arriving at conclusions concerning causes, effects or trends of past occurrences that may help explain present events and anticipate future events.
- Attempts to interpret ideas or events that had previously seemed unrelated.
- Synthesizes old data or merges old data with new historical facts that the researcher or other researchers have discovered.
- To reinterpret past events that have been studied.

Steps involved in historical research

- Identifying and delineating the problem.
- Developing hypothesis or hypotheses that one is interested in testing.
- Collecting and classifying resource materials, determining facts by internal and external criticism.
- Organizing facts into results
- Interpreting data in terms of stated hypothesis or theory.
- Synthesizing and presenting the research in an organized form.

3. Observational Research

The current status of a phenomenon is determined not by asking but by observing. This helps to collect objective information.

Steps

- Selection and definition of the problem.
- Sample selection.
- Definition of the observational information.

- Recording observational information
- Data analysis and interpretation.

Types of observational research

1. *Non-participant observation*
   The observer is not directly involved in the situation to be observed.
2. *Naturalistic Observation*
   Behaviour is studied and recorded as it normally occurs.
3. *Simulation observation.*
   The researcher creates the situation to be observed and tells subjects to be observed what activities they are to engage in. Disadvantage – the setting is not natural and the behaviour exhibited by the subjects may not be the behaviour that would occur in a natural setting.
4. *Participant observation*
   The observer becomes part of or a participant in the situation. May not be ethical
5. *Case studies*
   A case study is an in-depth investigation of an individual, group, institution or phenomenon. It aims to determine factors and relationships among the factors that have resulted in the behaviour under study.
6. *Content analysis*
   It involves observation and detailed description of objects, items or things that comprise the sample. The purpose is to study existing documents such as books, magazines in order to determine factors that explain a specific phenomenon.

Steps

- Decide on the unit of analysis
- Sample the content to be analyzed
- Coding
- Data analysis
- Compiling results and interpretations.

Advantages

- Researchers are able to economize in terms of time and money.
- Errors that arise during the study are easier to detect and correct.
- The method has no effect on what is being studied.

Disadvantages

- It is limited to recorded communication.
- It is difficult to ascertain the validity of the data.

Characteristics of a Good Research

Following the standards of the scientific method

- Purpose clearly defined
- Research process detailed
- Research design thoroughly planned
- Limitations frankly revealed
- High ethical standards applied
- Findings presented unambiguously
- Conclusions justified
- Researcher's experience reflected
- Adequate analysis for decision-maker's needs