

18MTT34C – RESEARCH METHODOLOGY

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UNIT - I

RESEARCH - MEANING

- Research is an endeavour to discover answers to intellectual and practical problems through the application of scientific method.
- “Research is a systematized effort to gain new knowledge”.
-Redman and Mory.
- Research is the systematic process of collecting and analyzing information (data) in order to increase our understanding of the phenomenon about which we are concerned or interested.

What is Research ?

- Research is the process of finding solutions to a problem after a thorough study and analysis of the situational factors
- Research provides the needed information that guides managers to make informed decisions to successfully deal with problems
- The information provided could be the result of a careful analysis of data gathered firsthand or of data that are already available (in the company)

OBJECTIVES OF RESEARCH

- The purpose of research is to discover answers through the application of scientific procedures.

The objectives are:

- To gain familiarity with a phenomenon or to achieve new insights into it – **Exploratory or Formulative Research.**
- To portray accurately the characteristics of a particular individual, situation or a group – **Descriptive Research.**
- To determine the frequency with which something occurs or with which it is associated with something else – **Diagnostic Research.**
- To test a hypothesis of a causal relationship between variables – **Hypothesis-Testing Research.**

CHARACTERISTICS OF RESEARCH

- A Research is directed towards the **solution of a problem**.
- Research is based upon **observable experience or empirical evidence**.
- Research demands **accurate observation and description**.
- Research involves **gathering new data** from primary sources or using **existing data** for a new purpose.
- Research activities are characterized by **carefully designed procedures**.
- Research requires **expertise** i.e., skill necessary to carryout investigation, search the related literature and to understand and analyse the data gathered.
- Research is **objective and logical** – applying every possible test to validate the data collected and conclusions reached.
- Research involves the **quest for answers to unsolved problems**.
- Research requires **courage**.
- Research is characterized by **patient and unhurried activity**.
- Research is carefully **recorded and reported**.

SCIENTIFIC METHOD

- 'Science' refers to the body of systematic and organised knowledge which makes use of scientific method to acquire knowledge in a particular field of enquiry.
- Scientific method is the systematic collection of data (facts) and their theoretical treatment through proper observation, experimentation and interpretation.
- Scientific method attempts to achieve a systematic interrelation of facts by experimentation, observation, and logical arguments from accepted postulates and a combination of these three in varying proportions.

BASIC QUALITIES OF SCIENTIFIC METHOD

- It relies on empirical evidence.
- It utilizes relevant concepts.
- It is committed to only objective considerations.
- It presupposes ethical neutrality.
- It results into probabilistic predictions.
- The methodology is made known.
- Aims at formulating scientific theories.

CRITERIA OF A GOOD RESEARCH

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

QUALITIES OF A GOOD RESEARCH

- Systematic
- Logical
- Empirical
- Replicable
- Creative
- Use of multiple methods

NEED FOR RESEARCH

- EXPLORATION
- DESCRIBE
- DIAGNOSE
- HYPOTHESIS
- INDUCTIONS AND DEDUCTIONS

SCOPE / SIGNIFICANCE OF RESEARCH

- RESEARCH FOR DECISION MAKING
- Throws light on risks and uncertainty
- Identify alternative courses of action
- Helps in economic use of resources
- Helps in project identification

Contd..

- Solves investment problems
- Solves pricing problems
- Solves allocation problems
- Solves decision making issues in HR
- Solves various operational and planning problems of business and industry

CONTD..

- Provides the basis for all government policies in our economic system.
- Helps social scientists in studying social relationships and in seeking answers to various social problems.
- For students, research means a careerism or a way to attain a high position in the social structure.
- For professionals in research, it may mean a source of livelihood.

- For philosophers and thinkers, research means the outlet for new ideas and insights.
- For literary men and women, research means development of new styles and creative work.
- For analysts and intellectuals, research means generalizations of new theories.

PROBLEMS IN RESEARCH

- Not similar to science
- Uncontrollable variables
- Human tendencies
- Time and money
- Lack of computerization
- Lack of scientific training in the methodology of research

- Insufficient interaction between university research departments and business establishments
- Lack of confidence on the part of business units to give information
- Lack of code of conduct
- Difficulty of adequate and timely secretarial assistance

- Poor library management and functioning
- Difficulty of timely availability of published data.
- Ignorance
- Research for the sake of research-limited practical utility though they may use high sounding business jargon.

TYPES OF RESEARCH

- Descriptive Vs. Analytical
- Applied vs Fundamental Research
- Quantitative vs Qualitative Research
- Conceptual vs Empirical Research
- Other types

Descriptive Vs. Analytical

- **Descriptive Research** is a fact finding investigation which is aimed at describing the characteristics of individual, situation or a group (or) describing the state of affairs as it exists at present.
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- **Analytical Research** is primarily concerned with testing hypothesis and specifying and interpreting relationships, by analysing the facts or information already available.

Applied vs Fundamental Research

- **Applied Research** or Action Research is carried out to find solution to a real life problem requiring an action or policy decision.
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- **Fundamental Research** which is also known as basic or pure research is undertaken for the sake of knowledge without any intention to apply it in practice.
- It is undertaken out of intellectual curiosity and is not necessarily problem-oriented.
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Quantitative vs Qualitative Research

- **Quantitative Research** is employed for measuring the quantity or amount of a particular phenomena by the use of statistical analysis.
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- **Qualitative Research** is a non-quantitative type of analysis which is aimed at finding out the quality of a particular phenomenon.

Conceptual vs Empirical Research

- **Conceptual Research** is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones.
- **Empirical Research** is a data based research which depends on experience or observation alone. It is aimed at coming up with conclusions without due regard for system and theory.

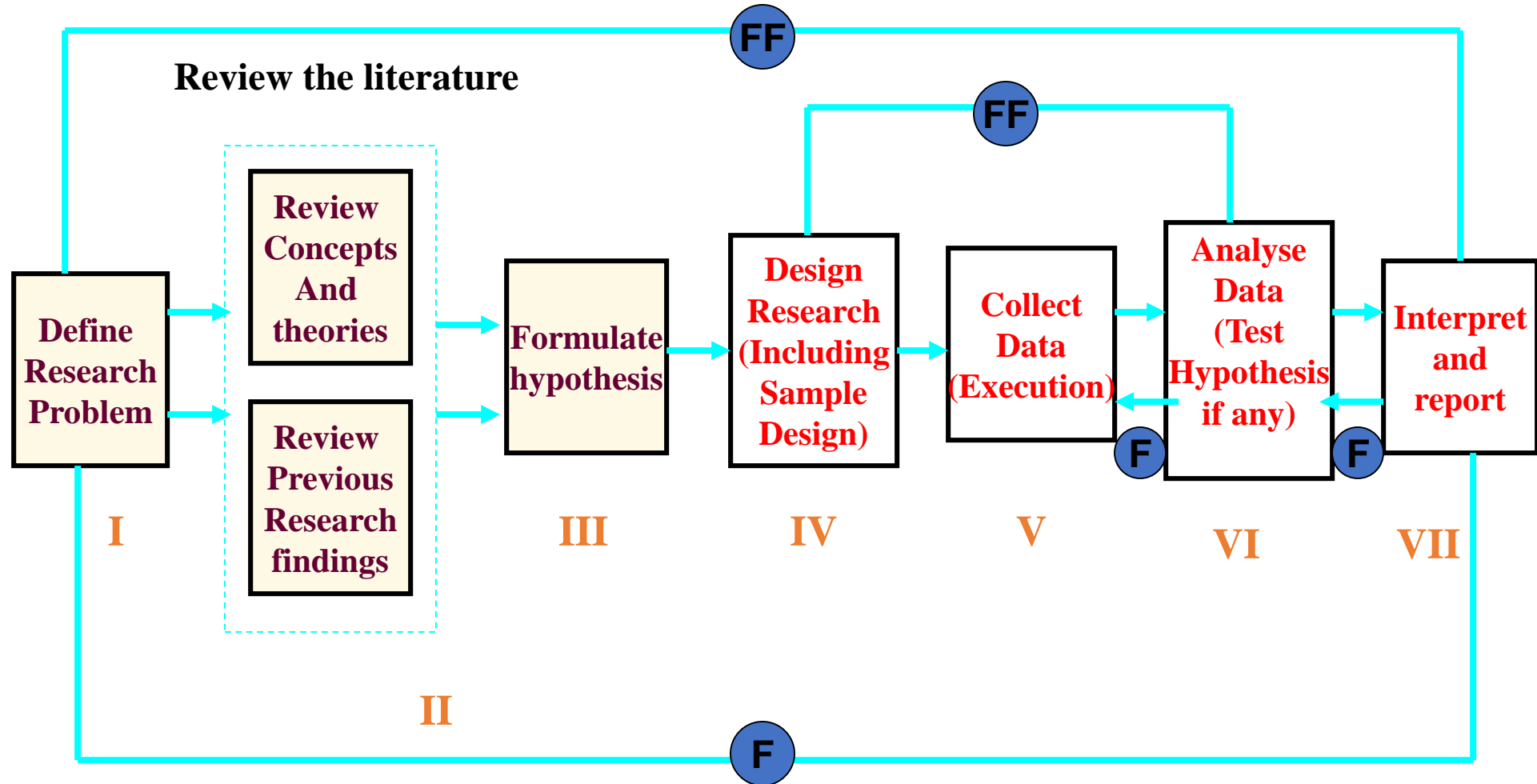
Other types

- **One-time Research** – Research confined to a single time period.
- **Longitudinal Research** – Research carried on over several time periods.
- **Diagnostic Research** – It is also called clinical research which aims at identifying the causes of a problem, frequency with which it occurs and the possible solutions for it.
- **Exploratory Research** – It is the preliminary study of an unfamiliar problem, about which the researcher has little or no knowledge. It is aimed to gain familiarity with the problem, to generate new ideas or to make a precise formulation of the problem. Hence it is also known as formulative research.

CONTD..

- **Experimental Research** – It is designed to assess the effect of one particular variable on a phenomenon by keeping the other variables constant or controlled.
- **Historical Research** – It is the study of past records and other information sources, with a view to find the origin and development of a phenomenon and to discover the trends in the past, in order to understand the present and to anticipate the future.
- **Decision Oriented Research** – carried out for decision making needs (No freedom)
- **Conclusion-oriented Research** – The researcher is free to choose the problem, redesign the enquiry process & change concepts in due course (Full freedom)
- **Operations Research** – Decision oriented research which applies scientific method. Provides quantitative basis for decision-making with respect to activities under purview.

RESEARCH PROCESS



F — Feed Back
FF — Feed Forward



RESEARCH ETHICS

Check your department's guidelines, but these are key considerations taking into account your safety (practical/ legal consequences of your work) and others (harm that could arise from the process or outcome of your work)

RIGHTS

Relevant legal and common practice rights

DISTRESS

To any person, regardless of 'legality'

FAIRNESS

In selection, conduct and reporting

CLARITY

Intended outcomes should be transparent to participants

SAFEGUARD

Vulnerable participants may need special care

PROTECT

Avoid unnecessary harm to the environment, documents, species or artifacts

**WHAT YOU RESEARCH
HOW YOU RESEARCH
WHAT YOU DO WITH
RESEARCH**

■ Ethics

- moral principles of right and wrong
- not absolute; may vary by person, by time, by place
- and may be in competition with each other

■ Research ethics

- incorporating ethical principles into research practice
- may involve a balance between and within principles and practices
- all stages, all those involved, from inception of research through to completion and publication of results and beyond

THANK YOU