Research Methodology

Introduction to Research

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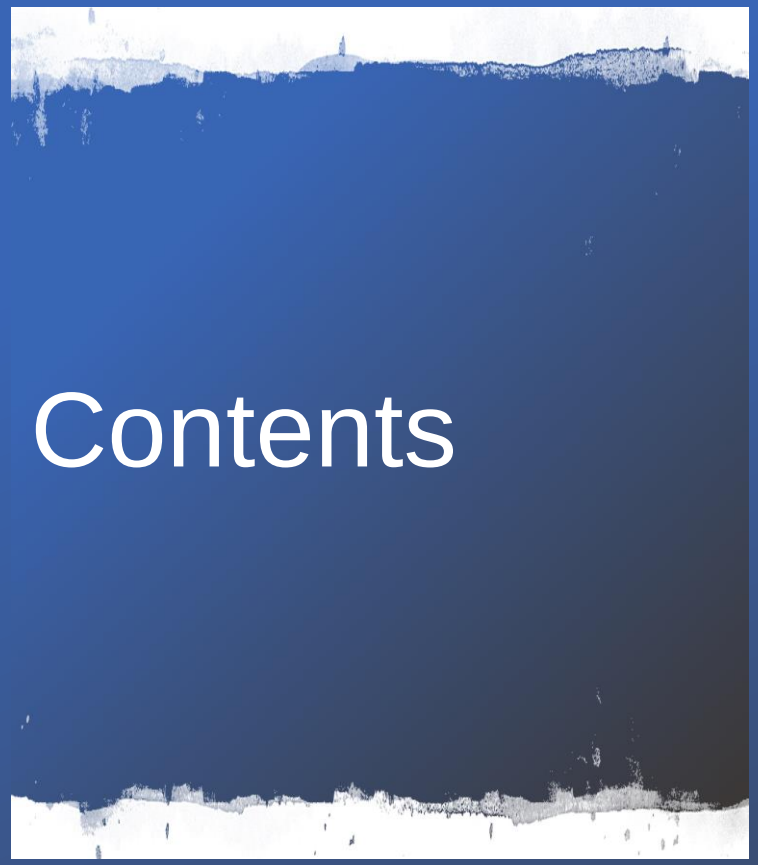

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1) What is Research?

Definition

- **Research** refers to the systematic method which consists of:
  - Stating the clear problem
  - Defining a hypothesis
  - Collecting the facts or data
  - Analyzing the facts
  - Reaching certain conclusion
    - ➢Solutions can achieve the concerned problem

Another Definition

- In simple word, research is a way of thinking
  - It questions what to do
  - It develops and tests of new or existing theories
  - It examines and explains observations
  - It finds answers to the problems
- In brief, research means systematic investigation into
  - A problem or solution where
    - ➢ The intension is to identify facts and/or opinions
      - ○ Will assist in solving the problem and dealing with situation

2) Objectives of Research

Main Aim of Doing Research

- Find out the truth which is hidden & hasn’t been discovered yet
  - Solve society problem
  - Contribute to mankind
  - Improve the reputation of the entity and countrywide
  - Provide the personal satisfaction

Research Purpose

- May fall into the following groups:
  - To gain **familiarity** with rare occurrence or achieve new sights
    - Exploratory or formulative research studies
  - To represent correctly the **characteristics** of an individual or a group
    - Descriptive research studies
  - To determine the frequency with something **occurs** or **associates**
    - Diagnostic research studies
  - To **test** a hypothesis of a casual relationship between variables
    - Hypothesis-testing research studies

Areas of research

- Research takes place in:
  - Education
  - Professional
  - Marketing
  - Human resources
  - Tourism
  - Transportation
  - Health care

3) Different kinds of Research

Basic Types of Research

1) Descriptive vs. Analytical
2) Applied vs. Fundamental
3) Quantitative vs. Qualitative
4) Conceptual vs. Empirical
5) Others
    i. One-time / longitudinal research
    ii. Field-setting / laboratory / simulation research
    iii. Clinical / diagnostic research
    iv. Exploratory / formalized research
    v. Historical research
    vi. Conclusion-oriented research
    vii. Decision-oriented research

Descriptive vs. Analytical

- Descriptive research
  - Including surveys and fact-finding enquiries of different kinds
  - The main characteristic of this method
    - ➢Has no control over the variables
    - ➢Can only report what has happened or what is happening
  - Methods: survey methods of all kinds including
    - ➢The comparative and correlational methods
- Analytical research
  - Use facts or information already available
  - Analyze these to make a critical evaluation of the material

Applied vs. Fundamental

- Applied research
  - Finding a solution for urgent problem facing a society or industry
    - Ex. Marketing research, evaluation research
- Fundamental research
  - Concerning with generalizations and with the formulation of a theory
    - Ex. Human behavior study to make a generalization conclusion

Quantitative vs. Qualitative

- Quantitative research
  - Based on measurement of quantity or amount
    - Expressed in terms of quantity
- Qualitative research
  - Concerns with qualitative phenomenon (rare occurrence)
  - Aims at discovering the basic purposes and desires
    - Using in depth or across interviews, sentence completion
  - Is an attitude or opinion research
    - Ex. How people feel or what they think about a specific subject or institution

Conceptual vs. Empirical

- Conceptual research
  - Relates to some abstract idea(s) or theory
  - Aims to develop new concepts or to reinterpret existing ones
- Empirical research (or data-based research)
  - Relies on experience or observation alone
  - Is known as experimental type of research
  - Collect fact (or data) to prove or disprove hypothesis
    - ➢ Then perform experiment to bring desired information

Other Types of Research

- Are variations of one or more of the above stated approaches, based on either
  - The purpose of research
  - The time required to accomplish research
  - The environment in which research is done

Other Types of research

- One-time / longitudinal research
  - Based on time
  - One-time research: limited to a single time-period
  - Longitudinal research: carried on over several time-periods
- Field-setting / laboratory / simulation research
  - Upon the environment

Other Types of research

- Clinical research
  - Refers to case-study method
- Diagnostic research
  - Refers to in-depth approaches to reach the basic casual relations
    - ➢Go deep into the causes of things or events
- Exploratory research
  - Is the development of hypotheses rather than their testing
- Formalized research
  - Uses important structure and with specific hypotheses to be tested

Other Types of research

- Historical research
  - Utilizes historical source like documents, remains, etc.
  - Study events or ideas of the past including
- Conclusion-oriented research
  - Researcher is free to
    - Pick up a problem
    - Redesign the enquiry as he proceeds
    - Prepare the concept as he wishes
- Decision-oriented research (the need of a decision maker)
  - Researcher is not free to pick up a problem

4) Research Approaches

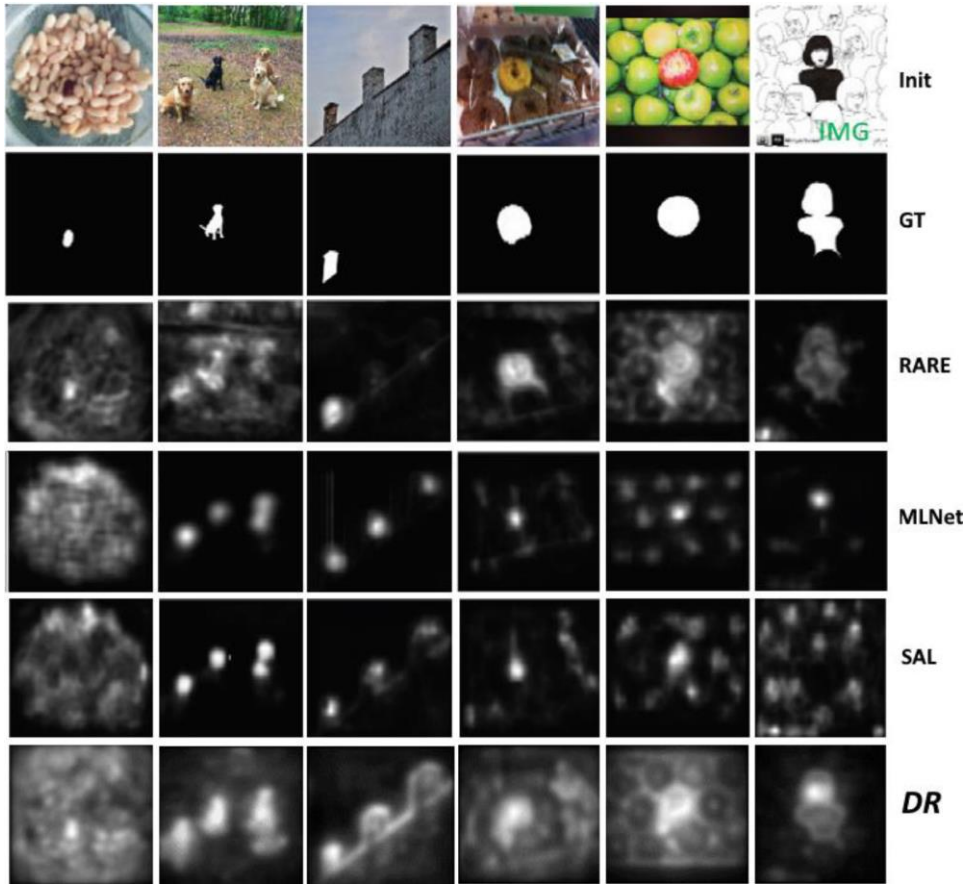
Quantitative Approach

- Involves the generation of data in quantitative
  - **Inferential approach**: to form a database (means survey research)
  - **Experimental approach**: to control over the research environment
    - ➢ Some variables are manipulated to observe their effect on other variables
  - **Simulation approach**: to construct an artificial (or virtual) environment
    - ➢ Allows observing of the dynamic behavior of a system under controlled conditions

Model	AUCJ	AUCB	CC	KL	NSS	SIM
SAL	0.83	-	**0.51**	**1.12**	**1.84**	**0.41**
DR	***0.86***	***0.85***	*0.48*	*1.25*	*1.58*	*0.36*
MLNet	0.82	-	0.46	1.36	1.64	0.35
DFeat	0.86	0.83	0.44	1.41	-	-
eDN	0.86	0.84	0.41	1.54	-	-
GBVS	0.83	0.81	0.42	1.3	-	-
RARE	0.75	0.77	0.38	1.41	-	-
BMS	0.75	0.77	0.36	1.45	-	-
AWS	0.71	0.74	0.32	1.54	-	-

Qualitative Approach

- Concerns with subjective assessment of
  - Attitudes
  - Opinions
  - Behavior
- Generates results in
  - non-quantitative form



5) Methods vs. Methodology

Research Methods

- All those methods/techniques
  - Are used for conduction of research
- Method used by the researcher
- Research techniques
  - Behavior and instruments, we use in performing research operations
- Research methods
  - Behavior and instruments, we use in selecting and constructing research technique

Research Methods

Type	*Methods*	*Techniques*
1. Library Research	(i) Analysis of historical records	Recording of notes, Content analysis, Tape and Film listening and analysis.
	(ii) Analysis of documents	Statistical compilations and manipulations, reference and abstract guides, contents analysis.
2. Field Research	(i) Non-participant direct observation	Observational behavioural scales, use of score cards, etc.
	(ii) Participant observation	Interactional recording, possible use of tape recorders, photo graphic techniques.
	(iii) Mass observation	Recording mass behaviour, interview using independent observers in public places.
	(iv) Mail questionnaire	Identification of social and economic background of respondents.
	(v) Opinionnaire	Use of attitude scales, projective techniques, use of sociometric scales.
	(vi) Personal interview	Interviewer uses a detailed schedule with open and closed questions.
	(vii) Focused interview	Interviewer focuses attention upon a given experience and its effects.
	(viii) Group interview	Small groups of respondents are interviewed simultaneously.
	(ix) Telephone survey	Used as a survey technique for information and for discerning opinion; may also be used as a follow up of questionnaire.
	(x) Case study and life history	Cross sectional collection of data for intensive analysis, longitudinal collection of data of intensive character.
3. Laboratory Research	Small group study of random behaviour, play and role analysis	Use of audio-visual recording devices, use of observers, etc.

Source [1]

Research Methods

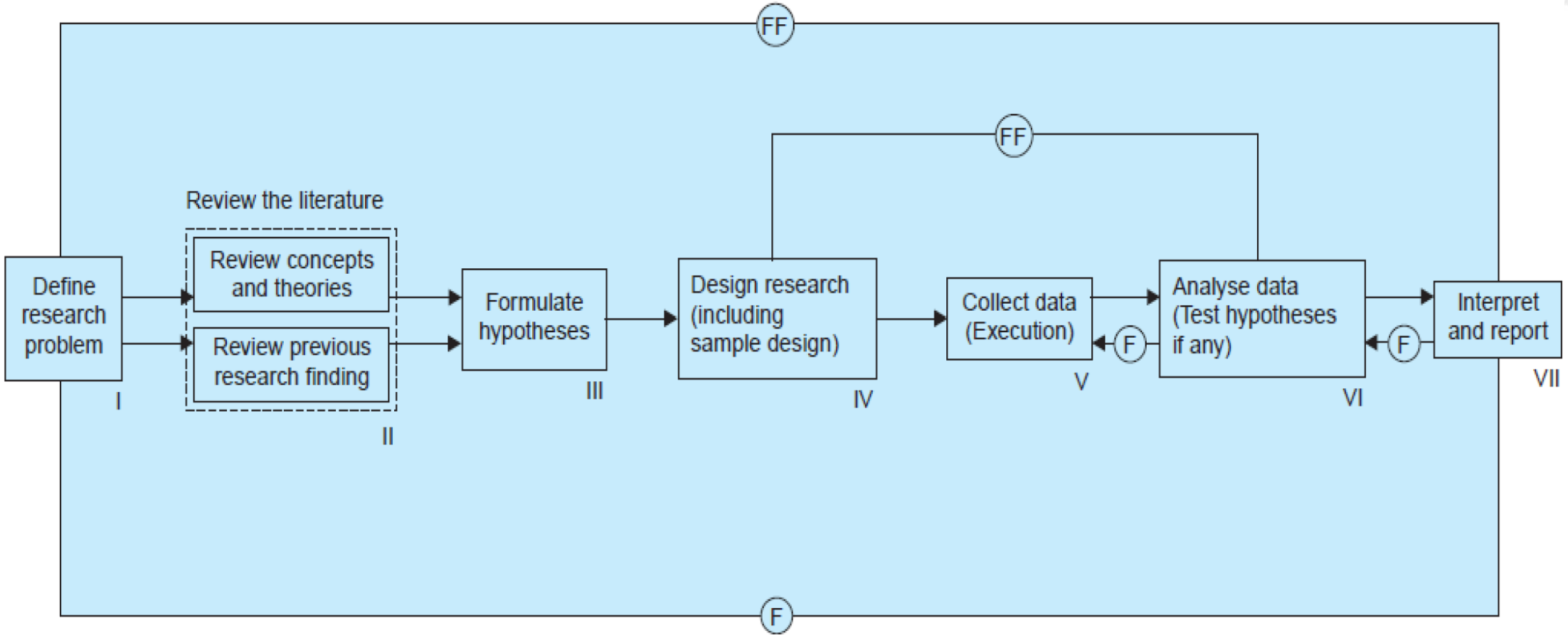
- Can be put into the following **three groups**:
  1) Methods which are concerned with data collection
  2) Methods which are the statistic techniques (establish data&unknown)
  3) Methods which are used to evaluate the accuracy of results obtained
- Researchers should
  - Know the relevant methods and which are not
  - Consider the logic behind the chosen method
  - Know the criteria by which they can decide
    - Certain techniques and procedures will be applicable to certain problems and others will not

Research Methodology

- Is a way to systematically solve the research problem
  - How research is done scientifically? – steps to conduct research
- Has many dimensions and research methods to form a part of the research methodology

6) Research Process

Research Process



- F = Feed back (Helps in controlling the sub-system to which it is transmitted)
- FF = Feed forward (Serves the vital function of providing criteria for evaluation)

7) Criteria of good Research

Criteria of good Research

- The purpose should be clearly defined
- Common concepts should be used
- The results should be as objective as possible
- The report should be frankness, acknowledge, procedural flaws (fail or reduce its effectiveness), limitations of the study
- The test (validity&reliability) of data should be checked carefully
- The conclusions should be justified with data and limited it

Reference

[1] Kothari, Chakravanti Rajagopalachari. Research methodology: Methods and techniques. New Age International, 2004, (Second Revised Edition), chapter1.