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A Qualitative Review on Research Methodology: An Overview

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Abstract: ***The term Research means a systematic way to investigate new facts or analyse the existing information to update the knowledge. Research methodology refers to the Science of Understanding how the solution to research problem can be obtained systematically. It can also be termed as the specific methods used to conduct the research. This paper presents the detail overview of different research methods. The research methods and methodology differ from problem to problem. In order to conduct a research, it is important for a researcher to not only have a good knowledge on Research methods but also on the research methodology. Researchers need to develop a Research design which acts like a blue print for conducting the research. This paper provides the analysis of different research methods and how to choose the research method based on the application***
Index Terms – Methodology, Research Process, Pure Research, Qualitative methods, and Quantitative methods

I. INTRODUCTION

Research is very important in order to progress. The term research is a combination of two words "Re-again, Search-find out". It an art of finding solution to the problem. According to the Oxford Advanced American Dictionary research is defined as "A careful study of a subject, especially in order to discover new facts or information about it" **[1]**P.M. Cook referred as "Research is an honest, exhaustive, intelligent searching for facts and their meanings or implications with reference to a given problem. The product or findings of a given piece of research should be an authentic, verifiable contribution to knowledge in the field studied." **[2]** Methodology refers to the organized, theoretical investigation of the methods used in the research. It includes the analysis of the research methods along with the ideologies related to the area of investigation. Technically it includes paradigm, research model, and the research techniques. **[3]** Research Methodology is art of studying how research is done systematically. It aims to explain on how to conduct a research, what are the problems that need to be answered and what are the pitfalls while conducting a research.

A. Purpose of Research

The main purpose of research is to provide the solution to the research problem.
To get familiar with the new phenomenon or to have good understanding of the situation
To update the existing knowledge
To determine the relation or association between two variables or events.
To describe the characteristics of an event or group

B. Characteristics of Research

1) *Objectivity:* Objectivity means without any bias. A good research should be always free from self-opinion.
2) *Validity:* Validity is the measure of "what is intended to be measured is measured or not." A valid research should collect and analyze the data that is actually need to be measured.
3) *Reliability:* It refers to the consistency of the results.
4) *Accuracy:* It is the measure of how close the measured values depict the actual situation.
5) *Systematic:* A good research should be systematic.it should follow step by step procedure to find the solution.

II. RESEARCH PROCESS

In order to find the solution to research problem step by step procedure need to be followed. Research Process gives the series of steps that need to be followed in order to conduct the research. These steps are not mutually exclusive. The research steps act like guidelines in order to conduct the research successfully. Table provides the basis of Research Philosophy

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Table I
Research Philosophy

Question	Answer	Feature
Why Research	To find truth	Research Philosophy
What to Research?	Any problem that is to be resolved	Research Problem
How to Research?	1.Plan 2.Systematic way to solve problems	1.Research Design 2.Reserach Methodology

The different steps involved in Research Process are[3]:

1) Define the research problem:
2) Review of Literature
3) Formulation of Research Hypothesis
4) Research Design
5) Data Collection
6) Data analysis and Interpretation
7) Results and Report.



Fig 1 Research Process

A. Define a Research Problem

A research problem is an unanswered question that the researcher need to find the solution[4].It is the first step in the process of research. Researcher should identify the research problem and carefully make it susceptible for research. Generally research problem is chosen based upon the interest of the researcher or to solve the social and Technology related

B. Literature Survey

It is the integral part of the research. Literature survey refers to the through study of the content already known in the selected field of inquiry. It helps to narrow down the topic and to know whether the research problem is already solved. Clarity of thoughts can be acquired through literature survey. Sources of information are often classified as Primary, secondary and Ternary sources.

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C. Hypothesis formulation

Hypothesis is an educated guess regarding the research question. It is a tentative statement that needs to be proved. Hypothesis enhance the objectivity and purpose of research. Good hypothesis is simple, clear, testable and precise. It should the researcher to prioritize the data. It should also be able to establish the relation between research variables.

D. Research Design

Research design acts like a blue print to conduct the research[5].Basically it the plan to conduct the research. It plays a major role in gathering the data. The four major characteristics of a good design are

1) Objectivity
2) Validity
3) Reliability
4) Generalizability

E. Data Collection

Data collection refers to collection of data that is required to answer the research problem [6]. In Research Methodology population is considered as characteristic of the specific group. The entire population is divided into samples. Sample is carefully chosen such that it depicts the entire population. A good sample always should be free of bias. Samples mainly depend on the sampling techniques. Sampling techniques are broadly classified as

1) Probability sampling
2) Non-Probability Sampling

Data is generally unorganized raw facts and Information is a processed, organized data presented in a given context.

a) Types of Data

- *Primary Data:* Data collected as prime source. It can be regarded as first-hand information.
- *Secondary Data:* The data which has already published in some reliable source like journal, newspapers etc.,

b) Data Collection Methods

- Surveys
- Questioners
- Observations
- Interviews

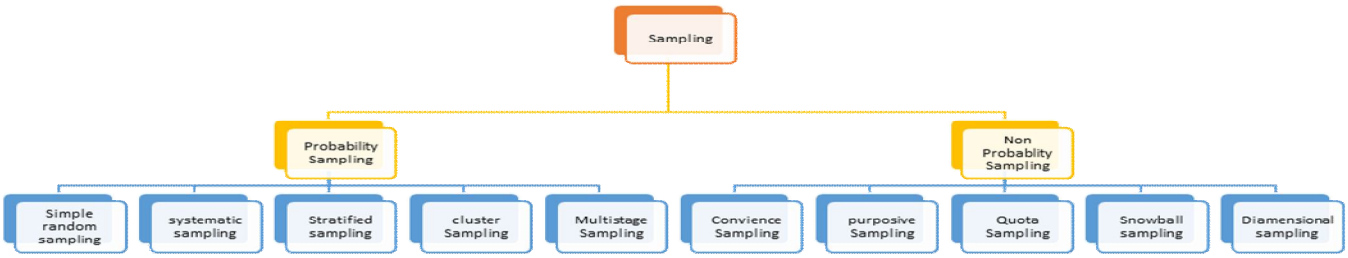


Fig 2: Sampling Techniques

F. Data Analysis

Data Analysis is the process of auditing the collection of raw data and structuring it into useful model of information supporting the solution to research problem. Data analysis can be quantitative analysis or qualitative analysis. If the data collected is qualitative in nature, then qualitative data analysis is used and if the data collected is quantitative in nature, then quantitative analysis is used. After the data analysis various tests like Student T test Z test, ANOVA are applied to test the hypothesis.

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G. Report Writing

Report writing is the final stage in the process of research. It provides all the necessary details regarding the research.

1) Characteristics of Thesis

a) It provides overall view and solution to the problem of research

b) It bears total summery of the research

c) It provides the detail knowledge of the researcher regarding the problem.

2) Format of the Thesis

a) Preliminary Section

- *Title Page:* It consists of name of the topic, name of Author, purpose of the study
- *Acknowledgement:* Acknowledging the help received during the process of research
- *Table of Contents:* It should mention the steps and procedures of this study in content
- *List of Tables:* List of all tables mentioned in the report

b) Main Body

- *Introduction:* Introduction of the topic, the statement of problem and significance of the study
- *Literature Review:* Previous study, if any available in the area of research taken as reference.
- *Research Methods:* Design of the research and also tools and techniques used in the research
- *Results:* Presentation and analysis of the data
- *Discussion and Conclusion:* Has he summary and conclusion of the total work
- *Reference Section*: This section occupies an important place in report writing. It forms the basis of literature for any research. It helps to further narrow the topic and provides the gratitude to the researchers who had done research earlier.

III. RESEARCH TYPES AND METHODS

Every research has its own purpose. There are different ways through which a research can be conducted. They referred as Research methods [6]. Research methods can be classified into different categories:

A. Based on Purpose

B. Bsed on Nature of Data to be collected

C. Based on Source of research

D. Based on research Objectives

1) On the Basis of Purpose: On the basis of purpose, we can categorize research into Pure Research, Applied and Action Research

a) Basic /Pure Research: This type of research aims to solve a problem by adding to the field of application of a discipline.

b) Applied Research and Action Research: Aims on analyzing and solving real life problems

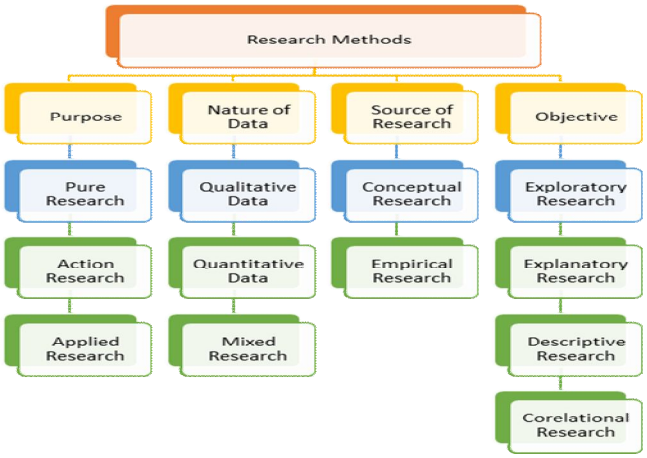


Fig 3:Research Methods

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2) On the Basis of Nature of Data: On the basis of nature of data we can classify research into:
a) Qualitative Research: When the data is in the form of qualitative data.
b) Quantitative Research: When the data is the form of quantitative data.
c) Mixed Research: When the data is in the form of both qualitative and quantitative data.

3) On the basis of basis of source of Research: On the basis of basis of source of research it can be classified into:
a) Conceptual Research: Emphases on the concept or model that explains or defines the phenomenon to be studied.
b) Empirical Research: Depend on on the researcher understanding or observation alone.

4) On the basis of Objectives of the Research: On the basis of Objectives of the research, it can be classified into:
a) Exploratory Research: This Research is conducted for a problem that has not been studied more clearly.
b) Explanatory Research: Aims at explaining the cause and consequences of well-known problem
c) Descriptive Research: This research is conducted when a study is designed to describe what is going on?
d) Correlational Research: It explains how two or more variables are relate to each other.

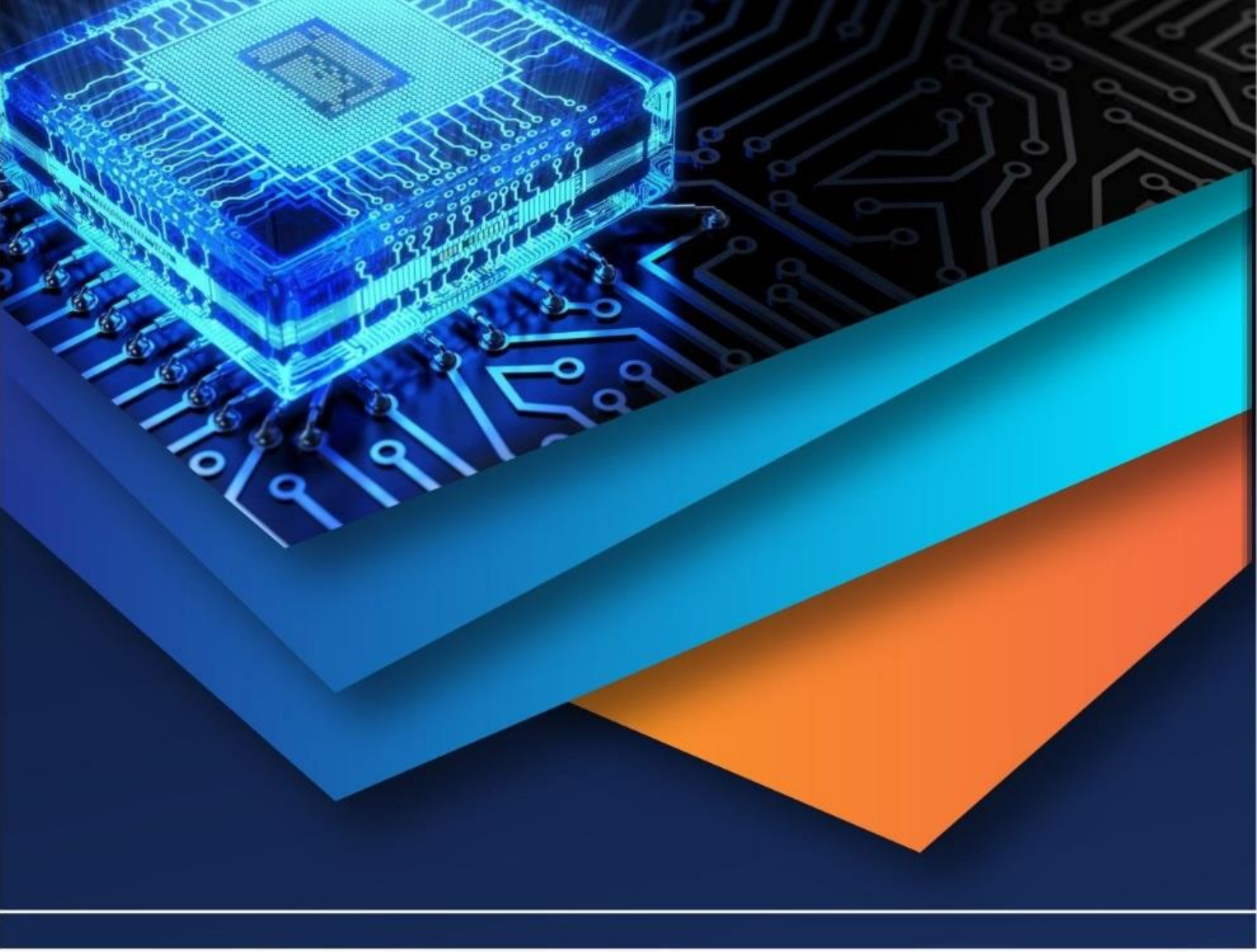
IV. CONCLUSION

Today man is able to travel to space; find the medicine to most dangerous diseases. Thanks to "Research". Research plays a key role in the advancement of mankind. It the foundation for development. A research successful only if it is conducted systematically without any bias. So finally, it can be concluded that the research is the journey from unknown to known; It is the exploration of truth; It is the basis for development.

REFERENCES

[1] Oxford Advanced Learner's Dictionary (2021).
[2] Cook, D. R. And N. K. Lafleur, A Guide of Educational Research, Boston, Allyn and Bacon, Inc., 195 pp.
[3] C.R. Kothari, Research Methodology Methods and Techniques, ISBN (13): 978-81-224-2488-1, 2004.
[4] https://www.researchgate.net/publication/39168208_Research_Methodology_Part_1_Introduction_to_Research_Research_Methodology
[5] Patel M, Patel N. Exploring research methodology: review article. International Journal of Research and Review. 2019; 6(3):48-55.
[6] Pavan G. K. and Dr. Nagarekha Kulkarni, Review Article on Research Methodology, International journal of innovative research and development, Vol. 3 Issue 7, 2014.

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