Research Methodology

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INTRODUCTION

Research is the process to find solution to a problem through the planned and systematic collection of data, analysis, verification and interpretation of data. Research is the very important process for accessing knowledge for promoting progress and to enable people to relate more effectively to his environment to accomplish his aim and to resolve his conflicts. The research is primarily carried out to discover new facts, to verify and test important facts, to analyze an event or process or phenomenon, to identify the cause and effect relationship, to develop new scientific tools and techniques, concepts and theories, to solve and understand scientific and nonscientific problems (Rajasekar, Philominathan and Chinnathambi, 2006). In daily life new problems, events, phenomena and processes occur every day. Practically, implementable solutions and suggestions are required for tackling new problems that arise. Scientists have to undertake research on them and find their causes, solutions, explanations and applications (Gogoi and Goowalla, 2015).

The term 'Research' consists of two words; Re and Search. 'Re' means again and again and 'Search' means to find out something (Pandey & Pandey, 2015).

According to Clifford Woody of the University of Michigan, "Research is a carefully inquiry or examination in seeking facts or principles; a diligent investigation to ascertain something."

According to C. Francies Rummel, "Research is an endeavour to discover, develop and verify knowledge. It is an intellectual process that has developed over hundreds of years, ever changing in purpose and form and always searching for truth" (Pandey & Pandey, 2015; Kothari, 2004; Singh, 2006).

BACKGROUND

In the 1600s the origin of modern scientific method occurred in Europe.

- **Copernicus:** A scientific model that could be verified and checked by observation.
- **Tycho Brahe:** Accurate instrumental observations to confirm the model.
- **Johannes Kepler:** Theoretical examination of experimental data.
- **Galileo Galilei:** Scientific laws developed from experiment.
- **Rene Descartes:** Mathematics to quantitatively show theoretical ideas.
- **Isaac Newton:** Theoretical derivation of an experimentally confirmable model.
- **Karl Popper:** Scientific theory should make predictions and can be tested and verified (Frederick, 2011; https://en.wikipedia.org/wiki/History_of_scientific_method).

OBJECTIVE OF RESEARCH

1. To gain knowledge with a phenomenon or to achieve new perceptions into it.
2. To draw accurately the characteristics of a particular situation, individual or a group.
3. To determine the time frame with which something occurs or with which it is associated with something else.
4. To test a theory of a causal relationship between variables that is to analyses process or phenomenon.
5. To discover new facts; verify and test important facts.
6. To develop new concepts, theories and scientific tools to solve and understand the problems.
7. To find answers to scientific, nonscientific and social problems and to overcome the problems occurring in everyday life (Gogoi and Goowalla, 2015; Bhawna, and Gobind 2015).

CHARACTERISTICS OF RESEARCH

1. It is directed toward the solution of a problem.
2. It gives special importance to the development of generalizations, principles, or theories that will be helpful in predicting future events.

3. It requires expertise.
4. Research involves collecting new data or information from primary or first-hand sources or using existing information for a new motive.
5. It based upon observable experience or empirical proofs.
6. Research demands accurate systematic observation, description and accurate investigation.
7. It is characterized by carefully designed methods or plan that applies careful analysis.
8. It achieves to organize data in quantitative terms.
9. It generally requires inexpensive informational data.
10. It is based on mutually depends upon causes and effect.
11. It sometimes requires courage (Pandey and Pandey, 2015; Kumar, 2015).

TYPES OF RESEARCH

The research is broadly classified into two main categories as Fundamental or Basic and Action or Applied. Various ways through which research may classify is summarizes in Figure 1 and Table 1.

Figure 1. Classification of research
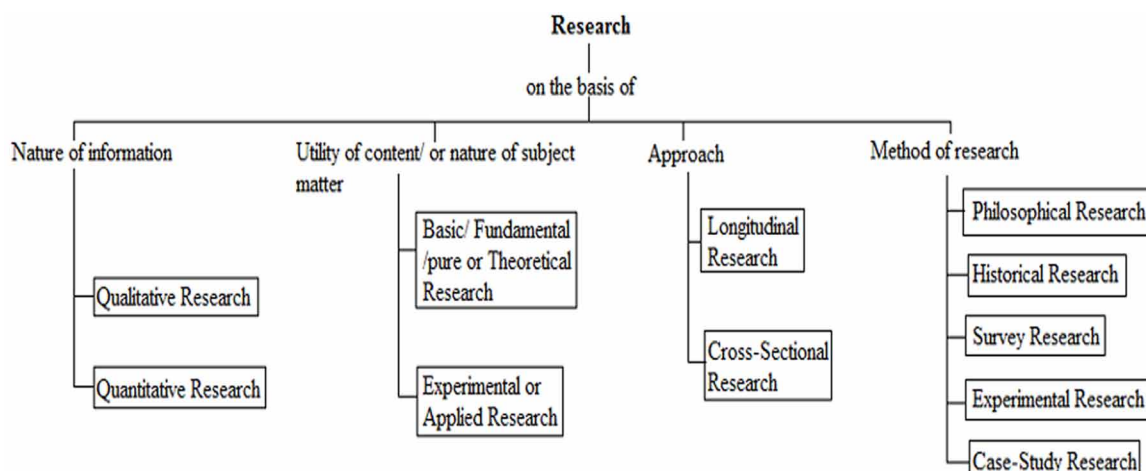
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