CHAPTER 03

RESEARCH METHODOLOGY

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3.0 Introduction

Research is closely concerned with the human behavior. It is commonly refers to a search for knowledge. Research is an art of scientific investigation. It is involved with creativity and innovation. The hidden things will be exposed to the universe through the research only. It provides a solution to a problem. Research also helps in generalization and formulation of new theories and invention. It involves collection of data, farming of hypothesis, analysis of data and finding conclusion, etc. to reach the goal of researcher. (Babu 4)

Research is systematic process of collecting and analyzing information in order to increase our understanding of the phenomena about which are concerned or interested. It is a careful research or inquiry into any branch of knowledge. Research in this days treated as advancement of knowledge acquire through scientific method. Research is a long process to achieve expected results keeping in view developing any branch of modern activities.

The searching process in known as “Research”. Research means search for knowledge. The most operative part of the word is ‘Search’. It means seeking of knowledge and also creation of new knowledge. The range of research activities is the distance between two stage seeking and creation of knowledge. Research is an intellectual activity which brings to light new knowledge or correct errors and misconceptions and adds in a orderly way to the existing corpus of knowledge. It gathers new knowledge or data from primary or first hand sources. Research is the expansion of original knowledge
and requires a continuous monitoring. It shows the way for advancement of knowledge regarding a specific topic. (Garg et al 14)

The word is also means searching again hereby implying the intensively study involved in research. It is composed by two words ‘re’ and ‘search’ which means to search again or to search for new facts or modify older one in any branch of knowledge. Research can be defined as creation of knowledge. Research can be defined as creation of knowledge through investigation, recording, and analysis of evidence.

3.1 Definition of Research

Research has been defined by various authors in different ways. It always begins with a question or a problem. Its purpose is to find answers to questions through the application of systematic and scientific methods. Thus, research is the systematic approach towards purposeful investigation. These needs formulating a hypothesis, collection of data on relevant variables, analyzing and interpreting the results, and reaching conclusions either in the form of a solution or certain generalization.

According to the Webster International Dictionary, “research as careful inquiry or examination in seeking facts or principles; diligent investigation in order to ascertain something”. (Sharma 13)

According to Best, “research is a more systematic activity directed towards discovery and development of an organized body of knowledge. It is based on critical analysis of hypothetical propositions for the purpose of
establishing cause-effect-relationship, which must be tested against objective reality”. (Best 48)

According to British Medical Dictionary* defines research as “Establishment of facts and their significance by experiment, scientific and analysis of data”. (Sengupta 16)

3.2 Characteristics of Research

The specific characteristics of research are-

- Research is highly purposive. It deals with a significant problem which demands a solution.

- Research is expert systematic and accurate investigation. The researcher tries to secure an expertise before undertaking any investigation. Researcher plans the analyzed with as complete accuracy as possible. He uses standardized and valid data gathering tools or instruments as he can find or device. He also employs mechanical means to improve upon the accuracy of human observation, recording and computation of data.

- Research must be able to control all the variables. This requires randomization at all stages, in selecting the subjects, the example size and the experimental treatments. This shall ensure an adequate control over the independent variable.

- Research gathers new knowledge of data from primary or firsthand sources.
• A research should be able to get approximately the same result by using identical methodology by conducting investigation on a population having characteristic identical to the one in the earlier study.

• A research should be free from the researcher’s personal biases and must be based on objectivity and/not subjectivity.

3.3 Research Methodology

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. Research methodology has many dimension and research methods do constitute a part of the research methodology. The scope of research methodology is wider than that of research methods. Thus, when we talk of research methodology we do not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others. (Bhattacharyya 51)

Research methodology is the study of method by which we gain knowledge…it deals with the cognitive processes imposed on research by the problems arising from the nature of its subject matter. Research methods comprise the procedures used for generating and evaluating data. There are numerous tools utilized to uncover truth, and find the explanations for the occurrence of a phenomenon.
3.4 Types of Research Methodology

Research methodology may be broadly classified into three main groups:

- Historical Research Methodology;
- Descriptive Research Methodology; and
- Experimental Research Methodology

Generally researcher has to follow any of these methods while conducting his research. But sometimes to solve a research problem the investigator may have to use more than one or even three categories of research methodology. However, selection of research methodology entirely depends on the problem chosen for research.

3.4.1 Historical Research Methodology- Historical research methodology is one of the most difficult types of investigation to conduct properly. History means an inquiry to establish what had actually happened, and to some degree, history is still that branch of learning that studies records of past events. This type of research is, therefore, concerned with a critical description and analysis of the past events in order to gain a better understanding of the present and future.

Historical methodology is based on the fact that clear knowledge of the past sometimes helps an investigator to know the trends of the current activity and even to predict the future trends development. Its aim is to apply reflective thinking to unsolved social problems by discovering past trends of events, facts and attitudes and by tracing lines of development in human thought and
action. This methodology is the induction of principles through research to the past and social forces, which have shaped the present. (Sengupta 26)

3.4.2 Descriptive Research Methodology - Descriptive research methodology is mainly concerned with the nature and degree of existing situations or conditions. It is essentially a fact-finding approach related largely to the present and abstracting generalization by the cross-sectional study of current situation. It collects data or information based on empirical observation and research. Descriptive research methodology aim is (i) to portray accurately the characteristics of a particular individual situation or group; and (ii) to determine the frequency with which something occurs or when it is associated with something else. Descriptive research methodology may be divided into three separate groups:

- Case Studies;
- Comparative Research Studies; and
- Survey Research Studies.

3.4.3.1 Case Studies - A comprehensive study of a social unit - be that unit a person, a group, a district, or a community - is called case study. This type of research technique is generally based on observation, interview, description, and analysis of a single individual or situation. Case studies are generally taken up for intensive and in-depth rather than in-breadth analysis of a problem and generally applicable for study of a single or a small group of individuals or thing.
3.4.3.2 **Comparative Research Studies**- It provides a bridge between descriptive and experimental research. In this type of research attempts are made to ascertain common factors or relationship among phenomena. As the name suggests, in this type of research, an investigator generally tries to compare some existing research findings with his current experimental findings. Comparative method is thus a scientific method in which comparative data is collected with a specific purpose and analyzed and specific conclusions are derived from its result. Comparative research study is sometimes referred to as ex post facto design where the Latin word ex post facto connotes ‘after the fact, or retrospectively’.

3.4.3.3 **Survey Research Studies**- Survey research studies is more or less based on statistical analysis of a randomly selected limited number of data taken from the totality of a large number of cases occurring at a particular time. Data are generally collected by floating questionnaire, through standardized technique test, and also by arranging personal interviews. Survey research is mostly devoted to the study of characteristics of the populations under investigation.

3.4.3 **Experimental Research Methodology**- Experimental research methodology is a scientific investigation in which an investigator manipulates and controls one or more independent variables and observes the dependent variable for variation concomitant to the manipulation of the independent variables (Sharma 18). Experiments are conducted to be able to predict phenomenon. Typically, an experiment is constructed to be able to explain
some kind of causation. It is a systematic and scientific approach to research in which the researcher manipulates one or more variables, and controls and measures any change in other variables. It has a control group, the subjects have been randomly assigned between the groups, and the researcher only tests one effect at a time. It is also important to know what variable(s) you want to test and measure. Experimental research is important to society—it helps us to improve our everyday lives.

3.5 Tools for Data Collection

Collection of data is an essential part of a research proposal. The method of data collection to be used for the study, the researcher should keep in mind two types of data that is primary data and secondary data. The selection of appropriate method of research data collection generally depends upon the nature, purpose, scope of research study and objective of inquiry, time factor, availability of funds and trained personnel, and the precision required.

3.5.1 Observation – Observation defined as “systematic and deliberate study through the eye of spontaneous at the time they occur” (Sharma & Jain, 83). Observation is the methodological way of recognizing a noting, a fact, or occurrence, after involving some sort of measurement, understanding the culture of the people and the ability to interest with them are essential for good observation.

3.5.2 Questionnaire – Questionnaire is important tool of research commonly used in surveys of various kinds. The questionnaires refer to act of
standardized questions arranged in a definite manner to which responses are sought from all the individuals constituting the sample with a view to obtaining results (Sharma & Jain 47). A questionnaire consists of a number of questions printed or typed in a form or set of forms. Each question is worded exactly as it to be asked.

3.5.3 Interview- The question may be presented to the respondents in a face-to-face as oral-verbal stimuli and the researcher note down their oral-verbal responses. In these methods, the data are collected by presenting stimuli to the respondents in the form of questions for eliciting appropriate.

3.5.4 Schedule –Schedule is an instrument which is used by interviewer himself and filled by him in face to face situation with the respondent. According to W.J. Goode and P. K. Hatt, “Schedule is the name of usually applied to a set of questions which are asked and filled by an interviewer in a face to face situation with another.”(Sharma 116)

3.6 Methodology Used For Data Collection

The methodology used for this study is survey research method. Survey research is characterized by the selection of random samples from large and small population to obtain empirical of a contemporary nature. The knowledge allows generalization to be made about characteristics, opinions, beliefs, attitudes, etc. of the population being studies. The Method of survey research allows investigators to gather information about target populations without undertaking a complete enumeration. Field methods used to obtain
survey research data generally consist of a combination of techniques such as mail questionnaires, interviews with respondents and participant.

In this study the major data collection instrument is the questionnaire. A questionnaire has a considerable advantage of being cost-effective and also being used widely as a method in research. Questionnaire is personally distributed and collected the responses on the spot. Some questions are open-ended; some are tick mark questions and multiple questions.

3.7 Statistical and Mathematical Techniques Used for Data Analysis

Total 500 questionnaires were distributed. The respondents were assured that their identity well remains confidential and the result will not have any negative effect on their college. Out of 500 questionnaires only 305 questionnaires are selected for analysis of data. 95 questionnaires are rejected because of incomplete response from the respondents. The collected data were feed into computer system by using MS-Excel for data manipulation and statistical calculating for the present research study. Data thus collected were tabulated and analyzed by using simple technique i.e. percentage, Chi-square test were used for testing of hypothesis.

Chi-square test

The chi-square test is an important test amongst the several test of significance developed by statisticians. The chi-square test was used to compare an observed group of frequencies with an expected group of frequencies. Chi-square symbolically written as $\chi^2$, is a statistical measure
used in the context of sampling analysis for comparing a variance to a theoretical variance.

If at least one of the two characteristic is qualitative then chi-square ($\chi^2$) statistics is calculated based on the formula.

$$\chi^2 = \sum \frac{(f_o-f_e)^2}{f_e}$$

Where,

$f_o$ = Observed Frequency, $f_e$ = Expected frequency

If calculated value of $\chi^2$ is less than the table value, the hypothesis is accepted, but if the calculated value is equal or greater than the table value, the hypothesis is rejected.

The worked out Chi-square statistics is checked against the tabulated value for a given degrees of freedom (df) and 95 percentage probability or 0.05 significance level to accept or reject the association.
Reference:


