CHAPTER 3: RESEARCH METHODOLOGY

The word “research” comprises of two words, “re” and “search”, where ‘re’ means a new or over again and search means try to find something by looking or otherwise seeking carefully and thoroughly. Thus, to gather “Research” describes careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles.

A research typically comprises of defining and redefining problems, formulating hypotheses or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypotheses.

3.1 Different Types of Research Methodologies

Though there are many methods of conducting a research (Dhiman, 2015; Goode and Hatt, 2006; Sharma and Jain, 2008; Kothari, 2004; Sinha and Dhiman, 2002; Kumar, 1992; Busha and Harter, 1980). However, the important ones are discussed under:

3.1.1 Experimental Method

It is a collection of research designs which use manipulation and controlled testing to understand causal processes. Generally, one or more variables are manipulated to determine their effect on a dependent variable. Although experiments can be done to explore a particular event, they usually require a hypothesis to be formulated first in order to determine what variables are to be tested and how they can be controlled and measured (Walliman, 2011).

Chemical experiment in the laboratory is the best fool proof example of this kind of research.

3.1.2 Scientific Method

Scientific method is a philosophy / thinking or a guideline to the whole realm of research. Unless a research is based on scientific methodology, the result is not
considered reliable and valid. However, the purpose and scope of data collection or survey should be clearly set out at the very beginning. It requires the clear statement of the problem indicating the type of information which is needed and the use to which it is needed.

3.1.3 Survey Method

Survey methodology studies the sampling of individual units from a population and the associated survey data collection techniques, such as questionnaire construction and methods for improving the number and accuracy of responses to surveys.

Questionnaire and interview are the two most common methods to conduct surveys.

3.1.4 Case Study Method

Case studies are in-depth investigations of a single person, group, event, or community. Typically, data are gathered from a variety of sources and by using several different methods (e.g. observations & interviews).

3.1.5 Historical Method

Historical Method comprises the techniques and guidelines by which historians use primary sources and other evidence, including the evidence of archaeology, to research and then to write histories in the form of accounts of the past.

3.2 Questionnaire Design

Questionnaire Design is a structured technique for collecting primary data in a marketing survey. It is a series of written or verbal questions for which the respondent provides answers. A well-designed questionnaire motivates the respondent to provide complete and accurate information.

It has its own advantages and disadvantages; however, some of them are based on Hurry (2014) are described below:

Questionnaires offer good number of advantages:
They can reach to large number of people quite easily and economically (postal questionnaires). That might seem a trivial advantage, but the time savings against travelling to see participants can be substantial.

They are relatively easy to analyze.

They provide quantifiable answers.

Besides, the questionnaires also have disadvantages that relate closely to the advantages:

- Although postal questionnaires are easy and efficient, it is much harder to check if the answers are genuine.
- Postal questionnaires can have a fairly low response rate.
- The structure of the questionnaire can too easily reflect the way the researcher sees the issues, both in terms of questions chosen and the way the questions (and possible answers) are phrased.

For the present study, two types of the questionnaires were prepared based on the standard techniques suggested by Singh (2002). First questionnaire was meant for library staff for gathering information about the library services, library software and collection of documents etc. The questionnaire was for the users on which users’ opinions on the awareness of users about automated libraries; awareness about library services and satisfaction with staff and complete recovery system were sought.

A format of the questionnaires administered to the library professionals is given in Appendix-I, while the other for library users is provided in Appendix –II.

3.3 Sampling of Population

The collected information, the samples were choosing using stratified random specimen methodology that is a blend of purposive sampling and random sampling. As per this system the whole group first alienated into subcategories or strata based on single criterion. Then from each group members are selected randomly under classified random specimen methodology, followed by random sampling. This methodology of specimen is most commonly used to make note that the specimen is meticulous implying that all such of the inhabitants get equal opportunities of being selected; therefore, 10% of entire population was taken as a sample. Besides, the personal visits
were also arranged in all there IITs libraries for observing the library services and the users interaction.

3.4 Methodology Adopted

Notably this was a pilot study was in which 10% of the sample was selected from the total population (users of libraries) to verify the validity and objectivity of the prepared questionnaires. Besides, the personal visits were also made. The facts collected on the questionnaires were also cross examined through the interview and observation. During the entire process, several suggestions were also obtained from the library users and from the librarians.

Although random sampling was adopted but sufficient care was taken to make sure that student selected should be sample representative of entire population. Thus, 660 questionnaires were distributed to target a population of 6672 in IIT Delhi, which contained 1704 faculty members, 4010 undergraduate and postgraduate students and 958 research scholars. Similarly, 590 surveys were distributed to 5910 users comprising of 3771 undergraduate and postgraduate students, 1392 faculty members and 747 research scholars of IIT Kanpur. Further, 555 questionnaires were administered to 5550 users comprising 3820 undergraduate and postgraduate students, 650 research scholars and 1080 faculty members in IIT Roorkee. However, the final response received constitutes 89.75%, 92.38% and 90.63% for IIT Delhi, IIT Kanpur and IIT Roorkee respectively.

Later, all the data were arranged and tabulated and analyzed from different angles to meet out the demand of the study. Finally, on the basis of the analysis, results were obtained and discussion to verify the objectives and the hypotheses was made along with the future prospects of the study.