CHAPTER – 3
RESEARCH METHODOLOGY

Research is a search of knowledge and out of scientific investigation. It is an
media or method of gaining new knowledge. It is also known as a movement to
achieve from known to unknown. It is some type of discovery. It can be said an
academic activity. In other words research deals with defining and redefining
problems, formulating hypothesis and suggestions for solutions. It start with the
process of collecting, organizing and evaluating data and achieve results through
deduction, carefully testing and determining the formulating hypothesis.

Research is a original contribution of the knowledge and add new
knowledge. It is a pursuit of truth based on study, observations, comparison and
experimentation. It is a systematic approach from generalization to specialization
by analyzing the facts and reaching to certain conclusion. The research discover
the answer of questions through scientific approach and process. Research is based
on many objectives, i.e. (i) achieve the univer problems with familiarity with
phenomena (ii) to present in accurate and specific form of an individual or a group
(iii) to determine the frequency with associated (iv) to test hypothesis.

Research may of many types (i) Descriptive and analytic (ii) Applied and
fundamental (ii) Applied and fundamental (iii) Quantitative and qualitative (iv)
Conceptual and Empirical. There are two basic approaches of research, viz.
quantitative and qualitative approach. The first is generalization in qualitative form
with quantitative analysis in formal and rigid fashion. It can be divided in three
form i.e. inferential that is in form of database, which infer characteristics and
relationship of population. The other is experimental by control of research
environment. It give effect one variable to even other variable. The third is simulation approach with artificial environment with which the relevant information and data can be generated.

3.1 Significance:

Every enquiry is progress over confidence is always harmful. Enquiry leads to invention of new thoughts and knowledge. Research inculcates the inductive thinking and promotes logical habits of thinking, thoughts and organizing the thoughts. Research is very significance because of many reasons:

(a) It provides a basic platform for government policies. Research facilitates the decisions of policy makers.
(b) It solves various operational and planning problems in taking decisions. It study market trends and formulate policies for production, and sales. It determine people behavior for taking business decisions.
(c) It study social relationship and answer various social problems.

The research methods refers to methods in library research also:
(i) Analysing the historical records
(ii) Analysis of documents.

Historical record means content analysis, films, statistical compilation, reference and abstract guidance etc.

There are many steps of research process of methodology:

(a) Formulating the research problem:

There are two types of problems (i) relating to nature (ii) relationship between variables. The first step to formulate general topic into scientific research problem which constitute a scientific enquiry. It is a great task to
formulate, and define the research problem which is important to entire research process.

(b) Extensive literature survey:
A research need an extension survey of related literature connected with the problem. The reference documents like indexing, abstracting journals, bibliographies, conference proceedings, reports and books are consulted for the purpose. Internet has been proved much helpful in their task of literature survey.

(c) Formulation of hypothesis:
Hypothesis or working hypothesis is a tentative assumption made in order to draw and test the logical and empirical aspect for consequence. The developed hypothesis based on logical and empirical approach provides focal point of research and also effect the manner in which tests must be conducted for analyzing the data and quality of data. Hypothesis must be specific and limited to a piece of research. It guides the area of research. While developing hypothesis, the following steps should be taken (i) discussion with the colleagues and experts (ii) Examine the data, record and documents (iii) Review the similar studies done in past (iv) Exploring personal investigation and filed interview.

(d) Preparation of research design:
The research problem should not confusing, double meaning but clearly defined as it a collection of relevant evidence involving minimum expenditure, efforts, time and money. There are two types of research design (i) experimental (ii) non-experimental hypothesis testing. Experimental design is a informal design with no central at any level while non-experimental design is a formal design. It is simple and complex factorial design.
(e) **Determining sample design:**

Population research is also known as census enquiry which covers the items and element is left. But is not true. Many elements are observed. This type of enquiry deals with time, money and energy. Researcher should decide away of selecting sample or sample design. Each element which has probability samples create difficulty to determine the probability. Probability samples are based on random sampling, stratified sampling and systematic sampling. But non probability sampling are based on convenience, judgement and quota techniques.

(f) **Collecting data:**

Generally data collected at hand are not adequate. Appropriate data should be collected which are authentic and reliable. But the efforts and other elements like money, cost, time and resources makes data differ at the disposal of researcher. Primary data are collected through survey and experiment based on quantitative measurement with the help of examining truth contained in hypothesis. But in survey methods there are many ways to collect data:

(i) **Observation:**

Researcher or investigation personally observe and collect information by organizing interview the respondents. It is also observed that the past and present behavior and attitude are not changed. This method is costly and more expensive and information received is limited. Therefore, it is not suitable to collect large samples.

(ii) **Personal interview:**

There have been many conceived questions which are asked or data collected through personal interview by the researchers. There interview is organized is a structural way. Its success is depend on the ability of
the interviewer. The researchers or interviewer should be more about and active and should handle the interviewee psychologically and all efforts should be made to collect data based on facts and reliable.

(iii) **Through phone:**

This method is not common. It is organized occasionally or in special circumstances when investigator is not in a position to approach the interviewee. This method is not widely used. This method is generally applicable in industrial researches.

(iv) **By mailing questionnaires:**

There are many researchers conducted and data collected from the respondents sit at a long distance. The research is not capable due to many reasons of short of time, problem of finance and time, to approach the respondent. The only alternative is left to approach him through mail. This is a popular method of survey research.

Questionnaire are performed and mailed to the respondents with the request letter to return the questionnaire duly filled at the earliest or time bound programme. This method is extensively used in business and economic survey. But this method make pilot study for testing the questionnaire to avoid any weakness in questionnaire. Questionnaire are preferred effectively to ensure to collect the reliable and fact finding datas.

(v) **Through schedule:**

There are circumstances when mailing of questionnaire method does not work and it was experienced to a need of making personal approach to the respondent, though the respondent has not agreed to give anything in writing or he does not find any time to fillup the questionnaire personally. In such cases the researcher, investigator or enumerators
make personal approach to respondents along with an group of question and personally take answer the questions by taking interview. The group of such questions are called interview schedule. These are scheduled questions which can be modified or changed at the time of interview. Enumerator or investigators are given necessary training of putting or presenting the questions, study the respondent is behavior, psychological dealing. Enumerator present the question and respondent answer verbally. This method is more effective if the researcher or the research director personally make field checks on the work of enumerators and ensure sincere work.

(g) **Extension of project:**

After data are collected it needs sincere execution of project in right manner and right direction. The effective execution of projects leads to reliable and factual data which help in statistically analysis and actual results. In this work few steps are necessary:

(i) Project is executed in systematic manner.
(ii) Survey should be conducted by means of structured questionnaire.
(iii) Data when received, may be mechanically processed
(iv) Only possible and suitable answer should be coded.
(v) Adequate training should be given to interviewers
(vi) Proper selection of proper interviewer should be made.
(vii) Training should be given in accordance with ‘Instructor’s Manual’.
(viii) The interviewer should be clearly explained his duties and responsibilities.
(ix) There should be occasionally field checks to ensure the sincerity and efficient job of interviewer.
(x) Survey should be under statistical control, so that standard of accuracy is maintained.

(xi) All possible steps should be taken to solve the non-cooperation problems.

(xii) A list of non-responsive respondents should be prepared and a sub-sample may be used to collect data.

(h) **Analysis of data:**

After data are collected and data are edited properly the next step is the analysis of data process. The data are grouped on the basis of their relationship of variables. Such groups are constructed such as establishment of categories. All these raw data are put under the coding programme, tabulated and drawing statistically inferences. The unwidely or second level data are again put under new group and table for further analysis.

The raw data are classified into some purposeful and usable categories. Coding is done and code are transformed into symbols, that may be tabulated and counted.

Tabulation is a part of data analysis where classified data are put in the form of table in which mechanical device is used. These are prepared by computer also, which saves time and put accuracy. Computer analysed the data, tabulate it an complex them and draw percentage and coefficient etc. by various well defined formulas, which help in testifying the new hypothesis.

(i) **Hypothesis testing:**

After data are analysed, the hypothesis is tested by researcher. Hypothesis are formulated before to research project. The hypothesis may be proved on the basis of the facts or disapproved to the contrary. The
researcher face both sides and answer while testing hypothesis. There are many tests applied like chi square test, t-test, f-test developed for the purpose of testing of nature and object of research inquiry. The result may be accepting the hypothesis or rejecting the hypothesis.

(j) **Generalization and interpretations:**

There are many chance of upheld of the hypothesis while testing several times, a research may reach to generalization. The real value of research lies on ability to arrive at certain realization. If a researchers has not formulated hypothesis before, or any hypothesis is not considered before hand, the findings may be based on some theory, which is known interpretation. The interpretation may rise new questions which can be the problem of further research.

(k) **Preparation of report or Research project:**

Finally, a research report is a prepared concluding with various findings and recommendations:-

(i) The layout of report should include:

(a) The Preliminary pages

(b) The main text

(c) The conclusion

The preliminary pages includes (i) Acknowledgement (ii) Preface (iii) Contents (iv) List of tables (v) List of diagrams (vi) List of abbreviations.

The main text includes (i) Introduction: containing the objectives, Research methodology, scope of the study. (ii) Summary of findings which contains finding and recommendations. If findings are extensive, it should be summarized (iii) Main report: is presented and prepared in logical sequence and extended in identifiable sections or chapters (iv) Conclusion contains result of the research clearly and precisely. It is final summing up.
(v) In the end there will be appendix which contains bibliography, i.e. list of books, journals, reports etc. which have been consulted during the research period. Index should be given at the end specially in published report.

However, the report prepared should be:

(i) It should be written in precise and objective style in simple language. Vague words and expressions should be avoided, like “It seems”, “There may be” and the likewise.

(ii) Charts and illustrations should be used only when they represent the information more clearly and forcibly.

Therefore, a research report or thesis should be systematic, logical, empirical and replicable. The purpose should be clearly defined. It should be in sufficient detail for further extension of another research in near future. Research design should be carefully planned to yield the results. It should show the frankness. Conclusion should be based on justifying the data of research. Researcher should have full confidence in him while doing research.

Problems:

There are many problems encountered during research programme:

(i) Lack of training in research methodology.

(ii) Insufficient interaction between University Research Department and other Research Institutions.

(iii) Lack of confidence in researchers about the data leakage.

(iv) Absence of code of conduct for researchers.

(v) Lack of financial assistance.

(vi) Lack of management functioning in library management.
3.2 Testing of Hypothesis:

It is an important component of research. It is a probability about the facts in favour or against. Its functions are to suggest new ways of experiments and observations. It is challenge to decision makers often face situations while testing hypothesis on the basis of information available and the testing. Hypothesis is an assumption and a central point of research to prove it offermatic or negative. Research hypothesis is a predictable statement, tested on scientific methods and relate independent to dependable variables.

There are many characteristics of hypothesis:

(i) It should be clear and precise.
(ii) It can be tested.
(iii) It should relate different variables.
(iv) It should be consistent in nature with most known facts.
(v) It should be manageable to testing within a reasonable explanation.
(vi) It must conceptually be clear.
(vii) It must be specific.
(viii) It must be verifiable.

There are three types of hypothesis: (i) Positive hypothesis, Negative hypothesis and Null hypothesis.

The positive hypothesis decreases errors statement. For example, more learning decreases errors or Guide are better than boys in numerical ability.
The Negative hypothesis has negative statement. These hypothesis are also known as directive hypothesis. It shows ego of the researcher and be try to prove it according to situations or disprove it also. The results of this hypothesis are not pure but based. It is second time hypothesis which are neither proved or declared null. This hypothesis is half hearted hypothesis and supposed not to be a good hypothesis.

The third hypothesis is null hypothesis and indicate that there is difference between two variables. They are equal and hence cannot be proved or tested for further preposition. It is based on assumption that no body is culprit until unless proved by court. Similarly, null hypothesis also indicate no relation or difference between two variables until unless proved by the result of research.

There are five functions of hypothesis, i.e.

(1) **Directional function:**
Hypothesis is a directional component which make the research based for results. It give direction for related literature to avoid to collect irrelevant literature. It indicate the relevancy of literature. It also help in collecting appropriate data. It fall in one category. Hence, this hypothesis provide directions relevant datas.

(2) **Determine the procedures:**
Hypothesis is not end to it. It may be extended to any limit. It direct the researcher to understood his problem and putting the result in better way. On this basis the researcher determine the procedures and methods adopted to solve the problems.

(3) **Selecting the facts:**
Hypothesis makes the selection of important facts more easy. It clears the understanding of the research as to which variables are to be studied. On the other hand unwanted methods are neglected.

(4) **Possibility of replication:**

There are two important factors which effect the scientific study, i.e. reliability and validity. Both the qualities may be assessed through replication. The scientific study procedures are predetermined and specifically setup. Replication is not possible in the absence of hypothesis.

(5) **Drawing conclusion:**

Science examine the relation of facts and scientific methods of research verify the facts and result of a research. Hypothesis is determined prior to research and than it is verified for truthfulness and falseness of the facts.

### 3.3 Research Methodology in this study:

It follows survey method. The area of survey is limited to Delhi region and point of study are five universities of Delhi (i) Delhi University Library System (ii) Jawaharlal Nehru University Library, New Delhi (iii) Jamia Milia Islamia Library, New Delhi (iv) IGNOU Library, New Delhi (v) GuruGovind Singh University Library, Delhi. The survey was in two parts (1) Survey of library resources which was responded by the librarian. The other survey was centered to users (Teachers, Research Scholars and Students).

The researcher formulated four hypothesis (i) The impact of e-journals more used than print journals (ii) The transit from print to e-journals is satisfactory (iii)
The trend has been changed to modernization and applied of I.T. (iv) The libraries are providing satisfactory services to its users.

The above hypothesis have been tested on the basis of scientist methods and statistically tested.

3.4 Collection of data:

Collection of data has been made on the basis of two questionnaire (i) One questionnaire has been structured for librarians. It was structured keeping in view many problems and questions grouped in many conceptual framework, i.e. (i) Introductory part (ii) e-journals (iii) Preferential concept of e-journals (iv) Access and retrieval (v) Users awareness (vi) Software and network (vii) Library budget (viii) Technology (ix) User statistics.

The second questionnaire was structured for users (Teachers, Research Scholar and students). It has been categorized in groups (i) Search strategy (ii) Access facilities (iii) Transit and trend.

3.5 Statistical analysis:

Respondents were selected on the basis of sample survey. As it was not possible to cover the whole lot of users due to many reasons, like, finance, time and manpower. It was decided to take sample, such as Teachers 25 from each library, Research scholars, 25 from each library and students 40 from each library. However, total respondents were Teacher 125, Research scholar 125 and student 400.

The questionnaire were mailed to librarians. The other questionnaire was distributed to students personally by the researcher and collected.
After the data collected out of questionnaires were analysed statistically. Tables were prepared and diagrams were drawn. On the basis of the presentation, the findings were identified and hypothesis tested. In the last recommendations were made by the researcher. A bibliography was prepared including references.

Research methodology may be qualitative as well quantitative. Qualitative research methods are based value added methods based on facts and draw a static result based on facts and draw a static result for future expectations. Quantitative research methods are measures are usually universal. For examples formulas of mean, median and mode for a set of data. In such research the approach is individually. It develops individual measures to interprete the primary data having a unique characteristics of the research. Quantitative research appears in the form of numbers and specific measurement, while in quantitative research data can be in the form of words, images and transcripts. Quantitative research can be presented or illustrate in the form of tables, graphs and pi-charts, while in qualitative research is usually presented in analyzing by using only words. Qualitative research recognizes abstraction and generalization as a matter of degree.

Both the researches, qualitative and quantitative forms of data as a use of inference.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Qualitative Research</th>
<th>Quantitative Research</th>
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<tbody>
<tr>
<td>1. Type of data</td>
<td>It is used in narrative fashion.</td>
<td>It is based on numerical.</td>
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<tr>
<td>2. Analysis</td>
<td>It identify major schemes</td>
<td>It is based on statistics</td>
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<tr>
<td>3. Scope of enquiry</td>
<td>Broad area of themes</td>
<td>Specific questions or specific hypothesis.</td>
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<td></td>
<td>4. Primary advantages</td>
<td>5. Primary disadvantage</td>
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<td></td>
<td>More depth, sample have narrative description.</td>
<td>Small samples used with no generalization</td>
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<td></td>
<td>Large sample, population is reflected by accuracy.</td>
<td>Superficial understanding of respondent’s thoughts and feelings.</td>
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<td>7.</td>
<td>Technique</td>
<td>Technique</td>
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<td></td>
<td>It is structured</td>
<td>Unstructured</td>
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<tr>
<td>8.</td>
<td>Tools</td>
<td>Tools</td>
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<tr>
<td></td>
<td>Simple and Complex survey, database analysis</td>
<td>Focus on groups, interviews etc.</td>
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<tr>
<td>9.</td>
<td>Participants</td>
<td>Participants</td>
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<td></td>
<td>Simple statistical representation</td>
<td>Small and homogenous group</td>
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<td>10.</td>
<td>Results</td>
<td>Results</td>
</tr>
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<td></td>
<td>Code use and complied as statistics</td>
<td>Use of words and description based.</td>
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<tr>
<td>11.</td>
<td>Training</td>
<td>Training</td>
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<td></td>
<td>Consistency, precise questions. Computerised analysis</td>
<td>Understanding objectives</td>
</tr>
<tr>
<td>12.</td>
<td>Strength</td>
<td>Strength</td>
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<td></td>
<td>Conclusive. Better for costly investment.</td>
<td>Exploration of questions</td>
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<td>13.</td>
<td>Weakness</td>
<td>Weakness</td>
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<td></td>
<td>Bios form. Questionnaire can be costly and time consuming</td>
<td>Subjective</td>
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</table>
Data collection is a process of acquiring and measuring information on variables of interest. It is in established fashion and users answer the questions. Data collection process is common in all type of researches. Answers are given of questions, hypothesis is tested and outcome is evaluated. Methods may vary by disciplines but accuracy and lowest collection are remain same. Data collection is based on quality and evidence which are translated and analysed and build a convincing and credible answer to questions.

It is necessary to maintain accuracy in data collection so that the integrity of research can be evidenced. The use of collection tools and mechanism reduces the errors occurring. A data collection process is proper and suitable if the data gathering is defined based on arguments and findings are valid.

There are three types of data collection:

(i) Data collection by survey method. In other words the questionnaire is answered on paper, pencil or phones. The questions are also predominated by questions.
(ii) Data collection through interviews. The questionnaire is structured or unstructured on the basis of series of one-by-one questions conversation. Such conservation is made by main individual or the leader of the group.

(iii) Data collection through focus groups. The interviews are structured with a group, preferably small group of the adequate and best related individuals. Only standardized questions are used. Questions are follow up. The topic is promptly elaborated which should be concerned with the topic and create understanding among participants.

Therefore, it is clear that:

(i) Questions or interview or focus should be such that participant or respondent should be enable to answer research questions accurately and mostly perfectly.

(ii) The data collection method should have inability to repeat and validate the study.

(iii) If data collection is not proper, the findings may be distorted in wasted resources. It can misled other researchers to pursuit fruitful issues or aspects of investigation. There should not be any compromise on decision and policies otherwise it may cause harm to human participant.

3.6 Ensuring the accuracy and appropriate in data collection:

The quality of data collection should always suited to the field of study. It should define the data properly, whether it is qualitative or quantitative. It is necessary for accurate data collection. It should maintain essentially the integrity of research. There are two aspects of data collection:
Proper instruments, i.e. modern, modified or developed with new technology.

Proper and clear instructions for their correct use.

Both above aspects reduce the livelihood of error occurring.

3.7 Integrity of data collection:

The integrity of data collection should be maintained. The primary stage of data collection should support the detection of errors in the process of data collection to preserve the data integrity. It is also detected whether the errors occurred are intentionally or not, whether deliberately, falsification or errors are due to random process or systematic process.

There are two factors which help in maintaining data integrity:

(i) Quality assurance,
(ii) Quality control.

Quality assurance includes all such activities that takes place before the beginning of data collection, while quality control includes all such activities which takes place after the process of data collection.

3.8 Quality assurance:

Quality assurance precedes data collection, allowing more focus on prevention of problems. Such prevention or protection can be possible by cost effective activities to ensure quality and integrity of data collection. All protective measures can be assured by standardization data collection process in comprehensive and detailed procedures applied manually. The defective and poorly defined and designed manual create risk of failures integrity, problems and
errors in the beginning process. All such problems and failures may be presented in the following ways:

(i) Uncertainty in case of methods, timing and identity of persons participated in data review process.

(ii) Wrong details of instruments of data collection which are used in place of step-by-step instructions on managing various tests.

(iii) Wrong identification of contents, which are specific and strategies of training or retraining staff members, which are engaged in data collection.

(iv) Observed instructions for the purpose of using, making adjustment to and collaborating data collection equipments if they are appropriate.

(v) There is no mechanism for changing the identification in procedure which are involved in investigation.

There are few components of quality assurance for the improvement of staff training plan:

(i) Effective communication

(ii) Rigorous training in planned way

(iii) Accuracy in data collection

(iv) Structured questionnaire

(v) Systematic interview method

(vi) Proper field study

(vii) Effective content analysis

(viii) Proper guidance

(ix) Proper observation

(x) Broaderest research questions

(xi) Initial research efforts
3.9 **Quality control** : Quality control activities occur after data collection. The manual should have specific instruction for careful documentation. Communication structure should be clearly defined, which is necessary and precondition for monitoring system. There should be no uncertainty about information flow or lack of communication between the investigators and the staff members regarding necessary directions about errors of data collection. Any poor communication may create problems and increase errors and limited opportunities of detecting errors.

The errors detection can be made by active staff observation during visit of sites, conference calls and regular reviews of data reports to identify inconsistency, extreme values and invalid codes. Any limit in site visits and irregular audit and untimely report well create difficulty in established data collection procedures manuals. Quality control also identify:

(i) Required responses,
(ii) Action plan,
(iii) Future error occurrence,
(iv) Proper feedback,
(v) Errors in individual data item,
(vi) Systematic errors,
(vii) Violation of protocol,
(viii) Staff problems,
(ix) Scientific misconduct.

3.10 **Methods of data collection** :

Data collection instruments are called tools. It is a vital task to select or choose a paper instrument for a particular research and type of data. There are
different proposals of research and every proposal has its specific identity and require specific instrument accordingly. There are many research proposals which needs more than one instrument or combination of instruments.

Academic achievement or improvement or development can be have with a suitable research. It postulate veiled reliable and sufficient facts and facts are normally achieved by systematic approach and procedures by involving various devices. All instrument used for research have specific features and prove appropriate in a given situation in a proposed research. John W. Best (1992) commented with an example of a carpenter who have different tools in his box and each tool have specific purpose of use. There are many devices are used and every device of data collection have merits and demerits and provide results according to its specific features and used as per acquired situation.

There are many research tools used in collecting data i.e.

(i) Various and appropriate tests,
(ii) Questionnaires structured or unstructured,
(iii) Attitude scale,
(iv) Qualitative interviews,
(v) Quantitative interviews,
(vi) Focus groups,
(vii) Observation, (Qualitative)
(viii) Quantitative observation.

3.11 Tests : There are many test conducted for data collection:-

(i) **Achievement test:** Achievement test means the test which is attempted to measures what an individual learned from his present level of performance. Such tests are helpful in determining the status of individual or a group
regarding his performance such achievement test or score are used for placing, advancing or obtaining a particular grade or level.

(ii) **Attitude test**: Such test assess the level of achievement which an academician or the user achieve and attain a level of a particular grade. Such attempt predict an individual capacity to require retaining improved performance with addition skills and training.

(iii) **Personality test**: This test is concerned with non-intellectual aspect of human behavior. Personality scale are self reported instrument. The individual check reported to certain questions or statements which yield scores for the assessment of certain personalities traits or tremendous.

However, data collection process is simple but depend on type of data collection tools required during the research. Tools are instruments used to collect information for the assessment of performance, self-evaluation and external evaluation. These tools are most effective to support the evaluation during research work.

There are many other factors/techniques which are used for secondary participation, but which have no direct contact to collect information or data. Such tools are:

(i) Postal mail
(ii) Electronic mail
(iii) Telephone
(iv) Web based surveys.
3.12 In-person observation:

It is known face-to-face contact or personal contact observation. It involves following activities.

(a) In-person survey,
(b) Direct observation,
(c) Participatory observation,
(d) Personal interviews and depth answers to complex questions
(e) Sample groups which can focus their opinion on certain, problems, theories or subjects.

3.13 Case study and contact analysis:

These are also data collection tools which are based on pre-existing research or search for recorded information. It help in gaining the required information which work as “fill in the blank” data collection process. Such instruments or tools include the following:

(i) It needs expert opinion. Expert may be a person attached to research or the leader of the group.
(ii) Case studied which includes previous findings of other researches.
(iii) Literature search which includes various articles and papers relating to subject.
(iv) Contact analysis of internal and external records both.

Out of the above tools three are primary resource for gaining research. Each type of data collection tool can be used along or in combination or conjunction with each other.