Chapter V
V Research Methodology

V.1 The Concept of Research

The Webster’s Dictionary defines research as a studious, systematic investigation or enquiry to ascertain, uncover or assemble facts used as a basis for conclusions or formulation of theory. The word ‘research’ is a combination of two words ‘re’ and ‘search’ which literally mean to search again or to search afresh. The search may be for new facts or new set of facts per se and the new facts may be such which may alter, modify or challenge existing beliefs or conclusions in any area of human knowledge or activity. Dr. Gupta, S. (2001, p.1) defines research as “any scholarly investigation in search for truths, for facts, for certainties”. To Kothari, C.R. (1990, p.1) it is a “voyage of discovery”. He further elaborates that “we all possess the vital instinct of inquisitiveness..... This inquisitiveness is the mother of all knowledge”. In the celebrated Encyclopedia of Social Sciences, Slesinger, D. and Stevenson, M. (1930) look upon research as the “manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge whether that knowledge aids in construction of theory or in the practice of an art”. In this context, the names of research scholars like Lundberg, J.W. Best, P.M. Cook, C.C. Crawford, J. Francis Rummel, Clifford Woody, R.M. Hutchins and Rusk come to mind. In a multi-faceted observation, Michael, V.P. (2000, p.2) records that “Research is the process of systematic and in-depth study or search for any particular topic, subject or area of investigation, backed by collection, compilation, presentation and interpretation of relevant details or data. It is careful search or inquiry into any subject or subject-matter which is an endeavour to discover or find out
valuable facts which would be useful for further application or utilization. Research may involve a scientific study or experimentation, and result in discovery or invention, which would aid either scientific development or decision-making. It may be concerned with general, abstract or concrete subjects. There cannot be any research which does not increase knowledge or improve scientific knowledge. A research that involves scientific analysis would result in the formulation of new theories, discovery of new ideas or techniques, modification of old concepts or knocking-off of an existing theory, concept or technique. It may develop hypothesis and test it. It may also establish relationships between variables and identify the ways and means for problem solving". In conclusion, we agree with Kothari (ibid, p.2) that the term “research” encompasses a “systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions towards the concerned problem or in certain generalizations for some theoretical formulation”.

V. 2 Research in Natural Sciences Vs. Research in Social Sciences

In the literature, we have come across only two broad classifications of research which are as given below:

i) Research in Natural Sciences like Physics, Chemistry, Astronomy etc.

ii) Research in Social Sciences.

In the context of Natural Sciences, various phenomena can be studied in a laboratory under controlled conditions. The work of Sir Isaac Newton relating to Laws of Motion (in Physics), Lavoisier in Chemistry and Galileo in Astronomy fall in this category. However, in Social Sciences, the studies are focused on human
behaviour in a social setting. But one cannot bring a piece of society to the laboratory and study its behaviour in the controlled environment of a laboratory. Human behaviour in a social setting can be studied only in the wide open world. Further, human behaviour is a complex phenomenon born out of interaction between social, economic, psychological, temperamental, genetic and physical factors. Research in Social Sciences or Social Research is that body of research which analyses human behaviour as a part of society. The famous social researcher, Young, Pauline V. (1960) looks upon social research “as a scientific undertaking which by means of logical and systematised techniques aims to discover new facts or verify and test old facts, analyse their sequences, inter-relationships and causal explanations which were derived within an appropriate theoretical frame of reference, develop new scientific tools, concepts and theories which would facilitate reliable and valid study of human behaviour. A researcher’s primary goal is to explore and gain an understanding of human behaviour and social life and thereby gain a greater control overtime”.

Gupta, S. (2001, pp 7-8), in unison with Young, avers that social research is “that part of research which studies human behaviour as a part of society. Social research is to find explanation to unexplained social phenomena, to clarify doubts and correct the misconceived facts of social life”. Kothari, C.R. (ibid, p. 8) has highlighted the dual role of research in social sciences in as much as it advances the frontiers of human knowledge in comprehension of complex social phenomena and the whole range of human interactions, and, also promotes knowledge for its own sake.

In tune with Young’s assertion that social research is a scientific undertaking, research in social sciences partakes of the characteristics of scientific research as applicable to social phenomena or human behaviour with reliability, validity and objectivity as its guiding principles. Accordingly, important characteristics of research in social sciences are indicated below:

i) Social Research is undertaken both for discovery of new facts and verification of old facts. The verification of old facts in social sciences is as relevant as the discovery of new facts, new relationships and new laws underlying the social phenomena as social sciences are highly dynamic in nature. This dynamic aspect of social sciences springs forth from the dynamic nature of feelings, responses and attitudes of human beings under different circumstances and different social settings. Thus, if the phenomena under scrutiny display significant variations over a period of time, the validity of old concepts becomes questionable and verification of old facts becomes essential to ensure relevance in a dynamic context. Additionally, verification is also dictated by notable advances in the area of research methodology and the latest techniques ought to be deployed to examine the validity of old concepts.

ii) The researcher in social sciences must be imbued with the rigorous mental discipline of the laboratory approach as applicable to natural sciences to ensure objectivity and freedom from personal bias in data collection, analysis and interpretation.
iii) Research in social sciences is of an inter-disciplinary nature and embraces deep scrutiny of complex social phenomena involving an active interface between political, socio-economic, educational, organisational, bureaucratic and all relevant aspects of social life of human beings. Because of its inter-disciplinary nature, it is difficult to classify social research as purely political, sociological or economic research.

iv) As the social phenomena or human behaviour is the subject-matter of study in social science research, experimentation on the laboratory pattern is not feasible. Yet, the device of control groups or controlled experimentation has been used by some of the researchers.

v) Social Science research normally requires, as a preliminary step, a hypothesis or a set of hypotheses focused on a provisional elucidation of a social phenomenon or the tentative solution of a social problem. However, the variables in social research are not capable of being measured precisely and only an approximate estimation of the values of the variables is feasible.

vi) The underlying processes of research in social sciences are designed to ensure objectivity of a high order. In that context, all care is taken to define every term or expression used and to document all references. All inferences drawn are laced with caution on account of the inherent limitations of methodology deployed, data collection and errors of human interpretation.

vii) The dynamic nature / context of social research is paramount. Accordingly, what is true of a social phenomenon in the past may not be true in the present.
In the context of effectiveness of human interactions in a social setting, there is a marked complimentarity and synergy between research in physical sciences and research in social sciences and both branches of human knowledge reinforce each other and pave the way to progress [see S. Gupta (ibid, pp 6-10)].

V. 4. Research Methods and Research Methodology.

Saunders et. al (2003, pp. 2, 481) lament that in research literature, the terms “research methods” and “research methodology” have been used rather interchangeably. According to them, it appears that the term ‘methodology’ has been employed as a “more verbose way of saying method”. They have sought to caution the researcher in social sciences to observe precision in the use of these terms. According to them, the expression ‘research method’ refers to the tools and techniques used to obtain and analyse research data including, for example, questionnaires, observation, interviews and statistical and non-statistical techniques. In contrast, the term ‘research methodology’ refers to “the theory of how research should be undertaken including the theoretical and philosophical assumptions upon which research is based and the implications of these for the method or methods adopted”. Similarly, Kothari, C.R. (ibid, pp 9-11) holds forth the view that the sweep of “research methodology” is much wider than that of “research methods”. He has elaborated that ‘research methods’ “may be understood as all those methods or techniques that are used for the conduct of research. Research Methods or techniques, thus, refer to the methods the researchers use in performing research operations. In other words, all these methods which are used by the researcher during the course of studying his
research problem are termed as research methods.” Kothari (ibid) goes on to elucidate that research methodology is multi-dimensional and research methods do constitute a part of research methodology. To him, “Research Methodology” is a way of finding the solution to a research problem in a systematic manner. It may be understood “as a science of studying how research is done scientifically. In it, we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods / techniques but also the methodology. Researchers not only need to know how to develop certain indices of tests, how to calculate the mean, the mode, the median or the standard deviation or chi-square, how to apply particular research techniques, but they also need to know which of these methods or techniques are relevant and which are not, and what would they mean and indicate and why. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not”. In the context of research methodology, he likens the researcher to “an architect who designs a building, has to consciously evaluate the basis of his decisions, i.e. he has to evaluate why and on what basis he selects particular size, number and location of doors, windows and ventilators, uses particular materials and not others and the like. Similarly, in research, the scientist has to expose the research decisions to evaluation before they are implemented”. In conclusion, Kothari (ibid) observes that “when we talk of research methodology we 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”. Thus, to be valid, reliable and objective, research in social sciences must be in conformity with the scientific approach as outlined in the preceding paras and be suffused with the characteristics of research in social sciences (Para V.3 of this study) simultaneously, the researcher in social sciences ought to remember that a sound research methodology is the *sine qua non* of soundness of inferences drawn as a result of research.

V.5. Types of Research.

In the research literature, research is stated to be of various types depending on the purpose of the research, the process of the research, the logic of the research, the outcome of the research etc: (see Hussey and Hussey, 1997, pp. 9-13). Accordingly, research is classified as under:

i) Exploratory Research

ii) Descriptive Research

iii) Analytical Research or Explanatory Research

iv) Predictive Research

v) Quantitative Research

vi) Qualitative Research

vii) Basic Research (Pure Research or Fundamental Research)

viii) Applied Research

ix) Deductive Research

x) Inductive Research
Exploratory Research aims to seek new insights into phenomena, to ask questions and to assess the phenomenon in a new light (Robson, 2002:59). Exploratory research has kinship with the “activities of the traveler or explorer” (See Adams and Schaneveldt, 1991). Its principal merit lies in the fact that it is flexible and adaptable to change; yet Adams & Schaneveldt (ibid) argue that flexibility inherent in exploratory research does not imply any absence of direction. On the contrary, the focus is initially broad and becomes progressively narrower as the enquiry advances. Gupta, S. (ibid, p. 95), in this context, draws on the analogy of a doctor who examines a patient in his clinic when a patient approaches the doctor with his/her ailment. From the doctor’s perspective, he is “systematically exploring the complaints of the patient and is striving to categorise” the symptoms of the patient. Pursuant to such exploration, he will come to a conclusion, at least tentatively, about the disease. Thereafter, he may call for a pathological report. On this basis, Gupta (ibid) infers that “all these steps, starting with the exploratory questions will help him to arrive at a correct diagnosis. This example will, while making the meaning of exploratory clear, also point out the inevitability and universality of the exploratory approach, which cuts across the barrier of the natural and social sciences. At this stage, one may be tempted to conclude that the moment one envisages his study as exploratory, the investigator has absolute freedom for random and aimless activity. The social scientist has freedom to follow interesting leads and to utilize his own ingenuity in obtaining information. Yet, the social scientist should exercise judicious temperance in this approach”. In the context of exploratory research studies, Michael, V.P. (ibid, p. 48) has indicated that “a specific problem is formulated for
precise investigation or a specific hypothesis is formulated from an operational observation. Such studies are therefore known as *formulative studies* also. Generally, flexible research designs are popular for exploratory studies because discovery of ideas and new insights are emphasized. Analysing relevant examples and cases to stimulate insight, literature survey, and evaluating the past experiences, etc: are generally associated with such designs”. While affirming the basic strands of the preceding discussions, Hussey and Hussey (ibid, p. 10) observe that “in exploratory research the focus is on gaining insights and familiarity with the subject area for more rigorous investigations at a later stage. Typical techniques used in exploratory research include case studies, observations and historical analysis which can provide both quantitative and qualitative data. Such techniques are very flexible since there are few constraints on the nature of activities employed or on the type of data collected. The research will assess which existing theories and concepts can be applied to the problem or whether new ones should be developed. The approach to the research is usually very open and concentrates on gathering a wide range of data and impressions”. To Gupta, S. (ibid), the principal advantage of the exploratory method “lies in its ability to generate many ideas that could be further explored in more controlled conditions, apart from overcoming the most difficult portion of an enquiry, which is its initiation. The concluding observations of the authoress are indeed very significant when she holds that “it can be said that no research proposal be aborted for want of methodology, as long as we have the exploratory method, a method which is flexible enough to permit the consideration of many different aspects of a phenomenon. This method attempts to see what there is rather than to predict the relationship that will be found”. Even the need for a
working hypothesis has been discounted by Kothari (ibid, p. 17) in the case of exploratory or formulative researches as these do not aim at testing the hypothesis.

**Descriptive Research** is research which describes phenomena as they exist; it identifies and obtains information on the characteristics of a particular problem or issue (see Hussey & Hussey; ibid). However, Saunders et. al (ibid) define descriptive research as a type of research the purpose of which is “to produce an accurate representation of persons, events or situations”. According to the authors, it may be an extension of, or a forerunner to, a piece of exploratory research. To Kothari, C.R. (ibid, p. 3) descriptive research includes “surveys and fact finding enquiries of different kinds. In social science and business research, we quite often use the term *Ex post facto research* for descriptive research studies. The main characteristics of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. Most *ex post facto* projects are used for descriptive studies in which the researcher seeks to measure such items as, for example, frequency of shopping, preferences of people or similar data. *Ex post facto studies* also include attempts by researchers to discover causes even when they cannot control the variables. The methods of research utilized in descriptive research are survey methods of all kinds, including comparative and correlational methods”. However, Hussey & Hussey (ibid, pp 10-11) are of the view that descriptive research “may answer such questions as:

- What is the absentee rate in particular offices?
- What are the feelings of workers faced with redundancy?
- What are the qualifications of different groups of employees?
The data collected is often quantitative and statistical techniques are usually used to summarise the information. Descriptive research goes further in examining a problem than exploratory research, since it is undertaken to ascertain and describe the characteristics of the pertinent issues. According to Saunders et al. (ibid, p. 97), one of the earliest well-known examples of a descriptive survey is the Domesday Book which described the population of England in 1085. They have also placed on record their observation that very often “project tutors are rather wary of work that is too descriptive. They will want you to go further and draw conclusions from your data. They will encourage you to develop the skills of evaluating data and synthesising ideas. These are higher order skills than those of accurate description. Description in management and business research has a very clear space. However, it should be thought of as a means to an end rather than an end in itself”.

Analytical or Explanatory Research is a continuation of descriptive research. Analytical / explanatory research encompasses all studies which aim to understand phenomena by discovering and measuring causal relations among them. Thus, the researcher travels beyond a mere description of the characteristics, to analysis and explanation of why or how it is happening. For example, information may be collected on the size of companies and the levels of labour turnover. Analytical research seeks to answer such questions as:

- How can we reduce the number of complaints made by customers?
- How can we improve the delivery times of our products?
- How can we expand the range of our services?
A significant element of explanatory research is identification and/or probable control over the variable in a research project, since it enables the researcher to attempt a better explanation of the critical variables or the causal links between the characteristics. (see Hussey & Hussey; ibid) In the same context, Saunders et. al (ibid, pp 97-98) draw attention to the illustrative example that “a cursory analysis of quantitative data on manufacturing scrap rates shows a relationship between scrap rates and the age of the machine being operated. You could go ahead and subject the data to statistical tests such as correlation in order to get a clearer view of the relationship”. Kothari, C.R. (ibid, p. 3) looks at analytical research in juxta-position with descriptive research thereby implying that descriptive research does not include analysis of existing quantitative data or establishment of causal relationships between the underlying variables as in the case of analytical research.

**Predictive Research**, in terms of the exposition of Hussey & Hussey (ibid), has a more extensive reach than the explanatory research. The latter seeks to establish an explanation for what is happening in a given situation, whereas the former attempts to forecast the likelihood of similar situation occurring elsewhere. Predictive research is credited with the potential to generalize from the analysis by predicting certain phenomena on the basis of hypothesized, general relationships. In the context of functional area of financial management, predictive research can also be used to build up a sensitivity analysis of the profitability of projected industrial projects in order to arrive at a sustainable range of variation in the values of variables like cost of capital, cost of production, product pricing, market potential etc: Hussey & Hussey (ibid) have sought to
illustrate predictive research by referring to solution of research problems in relevant business related areas such as:

- In which city would it be most profitable to open a new retail outlet?
- Will the introduction of an employee bonus scheme lead to higher levels of productivity?
- What type of packaging will improve the sales of our products?
- How would an increase in interest rates affect our profit margins?

Thus, according to the authors, the solution to a problem in a specific study will be applicable to similar problems elsewhere if the predictive research can provide a valid, robust solution based on a clear understanding of the relevant causes. Predictive research, subject to the aforesaid qualifications, can yield answers to queries like ‘how’, ‘why’ and ‘where’ in the context of current events and similar events in the future. It is also relevant in situations involving questions of ‘what if’ variety. However, the authors have struck a note of caution against excessive increase in the levels of sophistication in research as the higher the level of sophistication in research, the higher the level of complexity and refinements in details. In this context, they have raised the spectre of failure or non-completion of research.

**Quantitative and Qualitative Research**: The differentiation between the quantitative and qualitative research is based on the approach or research process chosen by the researcher. Kothari (ibid, p. 4) holds forth that Quantitative Research is applicable to phenomena where the underlying variables are capable of measurement and can be expressed in terms of numerical values. In contrast,
Qualitative Research is concerned with qualitative phenomena i.e. phenomena relating to or involving quality or kind and by definition are incapable of precise measurement. Whereas a quantitative approach involves collection and analysis of numerical data and application of statistical tests, yet, a qualitative approach, being more subjective in nature, involves examination and reflection on perceptions in order to gain an understanding of social and human activities. (see Hussey & Hussey; ibid). The same research problem can be tackled, depending on the inclination of the researcher, from the standpoint of quantitative or qualitative approach. As illustrated by Hussey & Hussey (1997, pp 12-13), if the research problem requires a study into stress caused by working night shifts, and the researcher adopts a quantitative approach, he may want to collect “objective, numerical data such as absenteeism rates, productivity levels, etc.” However, if the researcher chooses a qualitative approach, he may “want to collect subjective data about how stress is experienced by night workers in terms of their perceptions, health, social problems and so on”. Kothari, C.R. (ibid, p.4) emphasizes that qualitative research is highly relevant in the behavioural sciences “where the aim is to discover the underlying motives of human behaviour. Through such research, we can analyse the various factors which motivate people to behave in a particular manner or which make people like or dislike a particular thing”. Motivation research, attitude or opinion research are also examples of qualitative research which draws heavily on behavioural school of social sciences.

**Applied and Basic Research**: This classification of research is based on the final application / outcome of research. Applied research, as the name goes, is a
type of research which has been designed for application towards the solution of a specific existing problem facing the society or industrial / business establishment. In contradistinction, basic research is a type of research which has the primary aim of improving our understanding of general issues without any specific emphasis on its immediate application. This is also known as fundamental or pure research. It is looked upon as the most academic form of research as the predominant aim is to make a contribution to knowledge for common good and is not designed to solve a specific problem of an organization. It is like “gathering knowledge for knowledge sake” (see Pauline V. Young; ibid, p. 30) By way of illustration of fundamental research, Kothari, C.R. (ibid, pp 3-4) refers to research concerning some natural phenomenon or pure mathematics as examples of fundamental research. Further, he adds that “research studies, concerning human behaviour carried on with a view to make generalizations about human behaviour, are also examples of fundamental research, but research aimed at certain conclusions (say, a solution) facing a concrete social or business problem is an example of applied research”. Research to identify social, economic or political trends that may affect a particular institution are also examples of applied research.

**Deductive and Inductive Research**: Deductive research has been defined in literature as a study in which a conceptual and theoretical structure is developed which is then tested by empirical observation, thus particular instances are deduced from general inferences. In this context, the deductive method is visualized as moving from the general to the particular. For instance, there are several theories of motivation which can be put to test in our own work place.
Similarly, inductive research has been defined in literature "as a study in which theory is developed from the observation of the empirical reality: thus general inferences are induced from particular instances, which is the reverse of the deductive method. Since, it involves moving from individual observations to statements of general pattern or laws, it is referred to as moving from the specific to the general". (See Hussey & Hussey, ibid, p. 13)

While concluding the discussions, the authors have expressed their view that classification of various types of research is aimed at better comprehension of the processes of research and have struck a note of caution that the researchers should not feel too constrained while dealing with a research problem. The authors have forcefully argued that "it is important to recognize that one particular project may be described in a number of ways as it will have purpose, process, logic and outcome. For example, you may conduct an applied, analytical study using a quantitative approach. In a long-term project, you may wish to use qualitative and quantitative approaches, deductive and inductive methods, and you will move from exploratory research to analytical and predictive research". We feel inclined to agree with the authors in this regard provided the researcher adheres to the rigour of the scientific discipline inherent in the chosen research process / type of research.

V.6 Research Process : A brief overview

The research process is comprised of several steps. Kothari, C.R. (ibid, pp. 13-15) has, with several qualifications, suggested the following procedural guideline for the various steps in the research process:
1) Formulation of the Research Problem
2) Extensive Literature Survey
3) Development of the Hypothesis
4) Preparation of the Research Design
5) Determination of Sample Design
6) Data Collection
7) Execution of the Project
8) Analysis of Data
9) Hypothesis testing
10) Generalisations and interpretation
11) Preparation of the report or presentation of the results

The author has emphasized that the several steps outlined in the research process are not "mutually exclusive; nor are they separate and distinct. They do not necessarily follow each other in any specific order and the researcher has to be constantly anticipating at each step in the research process the requirements of the subsequent steps". As a detailed exposition of the steps delineated above is outside the scope of this study, only a brief overview has been presented here. However, it is proposed to examine in detail the significance of the hypothesis per se and the principal features of the various sampling techniques deployed in the context of data collection and data analysis.
V.7 Significance of the Hypothesis

Hypothesis can be defined as a set of assumptions provisionally accepted as a basis of reasoning, experiment or investigation. In this context, Kothari, C.R. (ibid, p. 17) observes as under:

“The role of the hypothesis is to guide the researcher by delimiting the area of research and to keep him on the right track. It sharpens his thinking and focuses attention on the more important facets of the problem. It also indicates the type of data required and the type of methods of data analysis to be used”. Thus, it can be said with impunity that the guiding power of the hypothesis is immanent in the entire research process. S. Gupta (ibid, p. 66) goes a step further when she observes that “hypothesis has a very important place in research although it occupies a very small place in the body of a thesis”. It is clear that the power and significance of the hypothesis lies in its subtlety. The author sets out the importance of the hypothesis as under:

i) It provides direction to research. It defines what is relevant and what is irrelevant. Thus, economy of time and effort is assured since recourse to irrelevant literature and collection of useless or excess data is avoided.

ii) It makes the researcher acutely aware of certain features of investigations found to be relevant from the viewpoint of the research problem under consideration.

iii) It stands between “precision and haphazardness; between fruitful and fruitless research”.

iv) It is “a guide to the thinking process and the process of discovery. It is the investigator’s eye – a sort of guiding light in the world of darkness”.

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v) It "sensitizes the researcher to facts and conditions that might otherwise be overlooked".

vi) It seeks to focus research. Without it research would be akin to random and aimless wandering.

vii) It makes the research goals clear and specific. Such clarity and specificity of goals provides the researcher with valid criteria "for selecting samples and research procedures to meet these goals".

viii) It integrates the entire research process and performs admirably the "function of linking together related facts and information and organizing them into one comprehensible whole".

ix) It ensures that the researcher is enabled to comprehend "with greater clarity his problem and its ramifications, as well as the data which beat on it".

x) The researcher is also enabled "to clarify the procedures and methods to be used in solving his problem and to rule out methods which are incapable of providing the necessary data".

xi) It provides "a framework for drawing conclusions". It functions as the reference point for data interpretation "in the light of tentative proposition or provisional guess. It yields the outline for setting conclusions in a meaningful way".

In our view, the preceding review of literature convincingly highlights the significance of the hypothesis in the context of research studies.
V.8 Sampling & Sampling Techniques: A Stepping Stone to Data Analysis

V.8.1 Introduction

As already emphasized earlier, the objective of investigations in social science research is to ascertain / discover something about a "general class of events, subjects, phenomena or variables". (see Walizer, M.H. and Wienir, P.L.; 1978, pp. 426-423) For example, if we are looking into the causes of socially deviant behaviour or delinquency, we will be interested to know about all delinquents and not only a few. Similarly, if we want to know about the relationship between social class and educational attainment, it will be desirable to comprehend these variables "for all people for all time" and not merely a few people at one point in time. It cannot be over emphasized that the need for data collection is of fundamental importance irrespective of the research questions and objectives of a research project. The centrality of data collection is indisputable. In Social Science Research, there are broadly two methods of data collection:

a) Census Method or Complete Enumeration Survey

b) Sampling Method or Sampling Techniques

Saunders et. al. (ibid, p. 474) have defined ‘census’ as the collection and analysis of data from every possible case or group member in a population. Here, the term ‘population’ is not used in the normal sense as understood in the case of population census but as "a complete set of cases or group members" which are the subject matter of a research study or a research project. In that context, it can as well be described as the “target population” or “research population” or “a Universe comprised of all the units of analysis".
The census method requires data collection and analysis of the entire target population or of each and every unit of the universe. This method yields more accurate and precise information as no unit of analysis or element of the universe is left out. However, where a researcher selects a small group as the "representative of the whole universe", such a small group is known as the sample or the research sample and the method deployed for selecting the sample is known as the sampling method. In the words of P.V. Young (ibid), “a statistical sample is a miniature picture or cross-section of the entire group or aggregate from which the sample is taken”. (Dr.) Gupta, S. (ibid, p. 100), in unison and with great precision, holds forth that “a sample is the reflection of the universe and bears all the characteristics of the universe”. Using the “set” terminology, Hussey and Hussey (ibid, p. 184) define the sample as “a subset of a population”. In other words, a truly representative sample is a microcosm of the universe in all respects. Fig: 5.1 portrays, in simplistic terms, the contextual relationship between the terms ‘population’, ‘sample’ and ‘individual cases’. The relationship between research populations and samples has been further amply illustrated in Fig: 5.2 with the help of “set” terminology and Venn Diagrams. In the Venn diagrams, (Fig 5.2), the area of the larger circle is proportional to the total number of units in the research population (a set of elements). The area of the smaller circle is proportional to the total number of units in the research sample (a sub-set of elements). It deserves to be noted that “even if the size of the set remains constant, the size of the sub-set can vary. A research sample can be a small part of the population or a large part of the population and still be a sample”. (see Walizer and Weimir; ibid).
V. 8.2 Census Method Vs. Sampling Method

However, the census method involving enumeration of all the elements in the universe is preferable for researchers if the size of the universe is small. When the sample size ceases to be manageable or, in other words, becomes large, it will be nearly “impossible for a researcher either to collect or to analyse all the data available owing to restrictions of time, money and often access”. Only Governments / big organizations are in a position to afford the amount of time, money, manpower and administrative support which a census method requires when the size of the Universe / Sample size is large. Sampling techniques furnish a “range of methods” that enable the researcher to reduce, to a manageable size, the amount of data he needs to collect by considering only data from a representative subgroup rather than all possible cases or elements in the Universe (Fig 5.1). Even the Central Statistical Organisation (C.S.O.) of the Government of India carries out National Sample Surveys both in the Population Sector and the Factory Sector and the NSS estimates have not been very different from the Census Counts [(see S. Gupta (ibid)] We are in agreement with Saunders et. al (ibid, p. 151) when they observe that where it will be impracticable for a researcher to survey the whole population, he needs to select a sample. According to them, sampling will be relevant irrespective of whether the researcher is planning to use a “predominantly qualitative or quantitative research strategy”. Thus, in the scenario described above, sampling provides a valid alternative to a census.
Researchers want to make statements about:

Researchers actually observe or measure the:

**Fig : 5.1** Population, sample and individual cases  
Source: Saunders et al. (2003)

**Fig : 5.2 (a) & (b)**: Venn Diagrams depicting research populations and samples.  
Source: Developed from Waltzer & Weinir (1978).
V. 8.3 Sampling Techniques: An Overview

1) The sampling techniques are of two types:
   i) Probability sampling.
   ii) Non-probability sampling.

**Probability Sampling** is modeled on a scientific technique of drawing samples from population according to some laws of chance in which each unit has some definite pre-assigned probability of being chosen in the sample. Probability sampling is of the following types:
- Simple Random Sampling
- Systematic Sampling
- Stratified Random Sampling
- Cluster Sampling
- Multi-stage Sampling (see S. Gupta, ibid)

**Probability Sampling**, as the name suggests, enables the researcher to “estimate statistically the characteristics of the population from the sample”. (see Saunders et. al. ibid)

**Non-probability Sampling**, on the other hand, does not envision the researcher to draw statistical inferences from the data analysis. However, in research studies, the role of non-probability sampling is as significant as that of probability sampling. In fact, in several cases of business research e.g. certain cases of market surveys and case study research, it is often not possible or practicable to fulfill the underlying assumption of probability sampling, namely, it is not possible to specify in advance the probability of any unit/case/element for inclusion in the
sample. In such situations, the researcher must take recourse to non-probability sampling which “provides a range of alternative techniques based on your (researcher’s) subjective judgment. In the exploratory stages of some research projects, such as a pilot survey, a non-probability sample may be the most realistic although it will not allow the extent of the problem to be determined. Subsequent to this, probability sampling techniques may be used”. (see Saunders et. al. ibid, p. 170). In this context, Kothari, C.R. (ibid. p. 73), in concurrence, observes that in this type of sampling, items for the sample are selected deliberately by the researcher; his choice concerning the items remains supreme. In other words, under non-probability sampling, the organizers of the enquiry purposively choose the particular units of the universe for constituting a sample on the basis that the small mass that they so select out of a huge one will be typical or representative of the whole. Saunders et. al. (ibid) further reinforce this school of thought by highlighting a situation in which the researcher, in order to answer his research question and to meet his research objectives, he may need to “undertake an in-depth study that focuses on a small, perhaps (only) one, case selected purposively. This sample may provide you (the researcher) with an information-rich case study in which you explore your question”. Kothari, C.R. (ibid) also indicates that for researches by individuals as well as in small enquiries, “this design may be adopted because of the relative advantage of time & money inherent in this method of sampling”. Similarly, “the inability to specify a sampling frame (a list of all cases in the population) may dictate the use of one or a number of non-probability sampling techniques”. (see Saunders et. al; 2003). Non-probability Sampling is comprised of the following techniques (Fig. 5.3):
- Quota Sampling Technique
- Purposive Sampling Technique
- Snowball Sampling Technique
- Self-selection Sampling Technique
- Convenience Sampling Technique

In Fig. 5.3, various types of sampling techniques, (both of the probability sampling and non-probability sampling variety) have been shown for reference and clarity.

It is now proposed to discuss briefly each of the sampling techniques as highlighted in Fig: 5.3 and refered to in the discussions. Additionally, schematic flow diagrams for probability sampling techniques & non-probability sampling techniques have been shown in Fig : 5.4 & Fig. 5.5 respectively in this chapter.
Fig: 5.3 Sampling techniques
Source: Modelled on Saunders et. al. (2003, p. 153)
V.8.4.1 Probability Sampling Techniques

These have already been referred to in the preceding para. As a pre-requisite to the choice of an appropriate sampling technique in this category, identification of a suitable sampling frame (the complete list of all the cases in the population from which a probability sample is drawn) and quantification of the actual sample size required, the research worker can now select the most suitable probability sampling technique to secure a representative sample. (Fig: 5.3) In this connection, five main probability sampling techniques as listed in Para V. 8.3. (and, shown in Fig: 5.3), have been presented in the form of a tabular analysis in Table 5.1. The tabular analysis in Table 5.1 indicates the factors which have an impact on the choice of the probability sampling technique. The choice of the probability sampling technique mainly depends on the following factors:

i) The research questions

ii) The research objectives

iii) The need to make statistical inferences from the sample.

iv) The need for face-to-face contact with respondents

v) The geographical spread of the population.

vi) The nature of the sampling frame.

vii) The structure of the sampling frame.

vii) The structure of the sampling needed by the researcher, and,

viii) The ease with which the technique may be described to the support workers, if any.

As already stated, the process of decision making in the choice of an appropriate probability sampling technique has also been shown in the form of a schematic
flow diagram in Fig: 5.4. The 13 rectangular boxes on the right hand side of the flow diagram (Fig: 5.4) indicate the contingencies when a specific probability sampling technique can be employed. The top most box on the right hand side also spells out the case when sampling is not needed and census method can be used instead. Now, we propose to examine simple Random Sampling technique as the first amongst the probability sampling techniques.

Simple Random Sampling is a probability sampling procedure that ensures that each case in the population has an equal chance of being included in the sample. (Dr.) Thakur, D. 1998, p.76) acclaims the random sampling method as “the most basic and least complicated” amongst all the probability sampling procedures. Inputs in terms of money, time and labour are less than other techniques. It is credited with the near certainty of providing a representative sample. As the sample size increases, it becomes progressively more representative of the universe. In order to select a random sample, all the elements comprised in the research population must be numbered and enumerated. Different units should be approximately of equal size. The units must be statistically independent of each other. Every unit should be accessible and units once selected should not be ignored or replaced by any other unit of the universe. The method of selecting the sample should be completely independent of the characteristics to be examined. Four methods are generally used for drawing out a sample on random basis. These are (i) Lottery Method (ii) Use of Tables of Random Numbers named after L.H.G. Tippet (1927), Fisher & Yates (1938), Kendall and Bobington Smith (1939); (iii) Selection from sequential list arranged in alphabetical, geographical or serial order, (iv) Grid system mostly used for selecting a sample
of geographical area. (see Gupta, S. ibid, p. 105). Some of the merits of simple
Random sampling Method are listed below:

i) As randomness is the very foundation of the sample selection procedure, it
ensures objectivity by eliminating personal bias.

ii) Prior knowledge of the characteristics of the population is not necessary.

iii) Appraisal of accuracy of outcome is ensured by sample error estimation.

iv) Representativeness of the sample with reference to the universe is also
assured.

v) Statistically, the efficiency of the estimates can be computed by taking into
account the standard errors of their sample distribution.

vi) It furnishes most reliable and a high quantum of information at least cost in
terms of time, money and labour.

ix) Comparatively, it is highly simple and capable of easy operationalisation.

Conti...
Decide to consider sampling

- There is no need to sample
  - Use non-probability sampling

- Must statistical inferences be made from the sample?
  - No
  - Use simple random sampling
  - Use systematic sampling
  - Use cluster sampling
  - Use multi-stage sampling
  - Use stratified random sampling
  - Use stratified systematic sampling
  - Use cluster sampling
  - Use simple random sampling

- Can data be collected from the entire population?
  - Yes
  - Use stratified random sampling
  - Use stratified systematic sampling
  - Use cluster sampling
  - Use multi-stage sampling
  - Use stratified random sampling
  - Use stratified systematic sampling

- Does the research require face-to-face contact?
  - Yes
  - Is population geographically concentrated?
    - Yes
    - Does sampling frame have relevant strata?
      - Yes
      - Does sampling frame contain periodic patterns?
        - Yes
        - Use stratified systematic sampling
        - Use stratified random sampling
        - Use cluster sampling
        - Use simple random sampling
        - Use systematic sampling
      - No
      - Use stratified systematic sampling
      - Use stratified random sampling
      - Use cluster sampling
      - Use simple random sampling
      - Use systematic sampling
    - No
    - Does sampling frame contain periodic patterns?
      - Yes
      - Use systematic sampling
      - Use stratified systematic sampling
      - Use stratified random sampling
      - Use cluster sampling
      - Use simple random sampling
      - Use systematic sampling
    - No
    - Use systematic sampling
    - Use stratified systematic sampling
    - Use stratified random sampling
    - Use cluster sampling
    - Use simple random sampling
    - Use systematic sampling
  - No
  - Use systematic sampling
  - Use stratified systematic sampling
  - Use stratified random sampling
  - Use cluster sampling
  - Use simple random sampling
  - Use systematic sampling

N.B.: Random sampling requires ideally a sample size of over a few hundred.

Fig: 5.4 Schematic Flow Diagram for selecting a probability sampling technique.
Source: Saunders et. al. (2003, p. 161)
Yet, the method of Simple Random Sampling is not without its inherent limitations and demerits as indicated below:

i) Normally, for effective results, the requirement for Minimum Sample Size exceeds a few hundred units/elements of the research population. When, in such an event, research population is spread over a large geographical area, cases selected by random sampling are likely to be dispersed evenly throughout the area. Accordingly, this form of sampling is not suitable in such cases and more so, on account of the allied travel costs attendant on face-to-face contacts spread over a large geographical tract. However, even in large geographical areas, simple random can be availed of if the face-to-face contact in a survey can be dispensed with in favour of an alternative technique of collecting data e.g. mailed questionnaires or telephonic interviewing.

ii) Certain parts of research population may be over-represented or under-represented in the research sample due to the occurrence of the phenomenon of bunching of cases where the random numbers are close together.

iii) The availability of a complete list of the universe is essential for this sampling method. However, often the non-availability of such data lists creates a built-in restraint on the universality of the application of this method.

iv) The research sample generated by this method may not be a true representative of the universe if its size is too small.
v) Sometimes, the results obtained by this method are such whose probability is very small.

vi) The requirement of numbering every unit before the same is chosen is a highly time-intensive exercise in all cases except in regular interval samples or small sized samples.

vii) The researcher needs to be on guard against the possibility of obtaining a poor or misleading sample. (see Thakur D. 1998; S. Gupta (2001); Saunders et al. 2003)

**Systematic Sampling** is a probability sampling procedure in which the initial sampling point is selected at random, and then the cases are selected at regular intervals. Processes involved in sample selection under systematic sampling are enumerated below:

i) Number each of the cases in your sampling frame with a unique number. The first case is numbered 0, the second 1 and so on

ii) Select the first case using a random number.

iii) Calculate the sampling fraction as given by the formula:

\[
\text{sampling fraction} = \frac{\text{Actual Sample Size}}{\text{Total Population}}
\]

iv) Select subsequent cases systematically using the sampling fraction to determine the frequency of selection.

For example, if your sampling fraction is 1/4, then one in every four cases needs to be selected till the required sample size is reached. "Thus, a systematic sample selects every nth element from a listing of the population. In a strict statistical sense, this is not equivalent to a simple random sample. In a practical
sense, it is close enough so that most researchers treat systematic samples the same as simple random samples". (see Walizer & Wiemir, ibid, pp. 435-436). It is capable of easy operationalisation if a complete listing of all elements in the research population is already available. The research worker may decide upon the sampling fraction according to the characteristics of the population under study. Systematic sampling is also known as patterned, chain or serial sampling. This method of probability sampling is commonly employed as it is simple, direct & inexpensive more so when a list of names or items is available. (Thakur D., ibid, pp. 80-81). However, any “hidden periodicity” of patterns in the sampling frame is likely to affect adversely the representativeness of the sample. Additionally, this method cannot be used for “exploring unfamiliar area because listing of elements is not possible. Further, exact mathematical procedures for estimating the precision of the systematic samples are not yet available. Currently, it can be stated with due caution, that, with large sized samples and under specified conditions, the quality of statistical inferences may be similar to or even better than those derived from proportionate stratified sampling. (see S. Gupta, ibid, pp 106-107)

**Stratified Random Sampling Method** is a probability sampling procedure in which the population is divided into two or more relevant strata and a random sample (systematic or simple) is drawn from each of the strata. It is a cross between simple random sampling and systematic sampling and accordingly shares many of the advantages and disadvantages of simple random and systematic sampling. (see Saunders et. al., ibid, pp 165-166) Recourse is had to this method when the population is heterogeneous with reference to the variable
or characteristics under study. Stratification stands for division of the universe into groups according to geographical, sociological or economic attributes or characteristics. To operationalise this method, the sampling frame is divided into a number of subsets depending on the number of relevant attributes. A random sample (simple or systematic) is then drawn from each of the strata. (see S. Gupta, ibid) The main objective of stratified sampling method is to increase the representativeness of the sample without increasing the size of the sample on the basis of greater knowledge of the attributes / characteristics of the research population and the various strata comprised therein. (see Thakur, D. ibid, pp 81-84).

**Cluster Sampling** is a probability sampling procedure in which the population is divided into discrete groups or clusters prior to sampling. A random sample (simple or systematic) of these clusters is then drawn. To all appearances, it seems similar to stratifying sampling as it is necessary to divide the population into discrete groups prior to sampling (see Henry, 1990). These discrete groups are described as *clusters* in the literature. The data could be grouped into clusters by type of manufacturing firm or geographical area. In the context of cluster sampling, the sampling frame is comprised of a *complete list of clusters* as compared to a *complete list of individual cases* within the population as in the case of random sampling (simple or systematic or stratified). Thereafter, a few clusters, normally with the help of simple random sampling, are then selected. This step is followed by intensive data collection from each and every case within the selected clusters. The cluster sampling technique can be accomplished in three main steps:
i) Choose the cluster grouping for your sampling frame.

ii) Number each of the clusters with a unique number. The first cluster is numbered 0, the second 1 and so on.

iii) Select a sample of clusters using random sampling (simple, systematic or stratified) as indicated in the preceding paras.

Random selection of clusters makes cluster sampling a probability sampling technique. In practice, the representativeness of the sample is found to be less than that obtained by stratified random sampling. Confinement of the sample to a few compact geographical clusters maximises the number of personal interviews the researcher can undertake within the available budget. However, it may have the effect of reducing the representativeness of the research sample. Accordingly, the researcher may be called upon to maximise the number of clusters to accommodate variations in the population within the available resources. In practice, the choice lies between a large sample from a few discrete sub-groups and a smaller sample distributed over the whole group. The researcher has to strike an appropriate level of trade-off between the amount of precision lost by using a few sub-groups / clusters and the amount of precision gained from a larger sample size.

**Multi-stage Sampling** is a probability sampling procedure that is a development of cluster sampling. It involves taking a series of cluster samples, each of which uses random sampling (simple or systematic). It is also sometimes, in the literature, called multi-stage cluster sampling. As the name implies, sampling has to be carefully carried out in several stages. Normally, it is found to be relevant
for overcoming the difficulties flowing from a geographically dispersed population when face-to-face contact is necessary or in cases where it is expensive and time-consuming to construct a sampling frame for a large geographical area. The technique involves taking a series of cluster samples, each involving some form of random sampling. This has been duly illustrated by the dotted lines in Fig. 5.3. As multistage sampling is dependent on a series of different sampling frames, the researcher is required to take steps to ensure that these are all appropriate. Stratified sampling techniques can be profitably employed in order to counter the effect of selection of progressively smaller and smaller clusters on the representativeness of the research sample. (see Saunders et. al. ibid, p. 167) The sample size for each such sub-group can be adjusted with reference to the relative size of each sub-group. S. Gupta (ibid) opines that multi-stage sampling is “more flexible in comparison to the other methods of probability sampling. It is simple to carry out and results in administrative convenience by allowing the field work to be concentrated and yet covering a large area”. Still, the probability of occurrence of significant errors as compared to other methods cannot be ruled out.

V. 8.4.2. Non-Probability Sampling Techniques

Quota Sampling is a non-probability sampling procedure which seeks to ensure that the sample represents certain characteristics of the population chosen by the researcher. It is entirely non-random but has some elements of stratified sampling. It is normally used for interview surveys. This technique is based on the premise that the research sample will represent the research population as the variability in the research sample for the quota variables is identical to that in
the research population. (see Fig. 5.5) Quota sampling can therefore be described as a “type of stratified sample in which selection of cases is entirely non-random” (see Barnett, 1991). In order to select a quota sample, the steps outlined below may be followed:

1) Divide the population into special groups

2) Compute a quota for each group based on relevant and available data.

3) Assignments for each interviewer may be prepared setting out the number of cases in each quota from which the interviewers must collect data.

4) Consolidate the data collected by the interviewers to provide the full sample.
Quota Sampling is superior to probabilistic sampling techniques in several respects. It is less costly and can be set up very quickly. As with TV audience research surveys, if the data collection is required to be carried out very quickly, then quota sampling is the only option. Additionally, as it does not require a
sampling frame, it may be the only technique of choice. This technique is often used for large populations as it is usually possible to obtain a sampling frame for small populations. Determination of sample size are dictated by the need to have adequate response in each quota to enable subsequent statistical analyses. *This normally requires a sample size of between 2000 and 5000.*

Computations for quotas are linked with relevant and available data. These usually reflect the proportions in which these occur in the population. “Without sensible and relevant quotas, data may be biased. For many market research projects, quotas are derived from census data. Your (researcher's) choice of quota is dependent on two factors:

- usefulness as a means of stratifying the data
- ability to overcome likely variations between groups in their availability for interview”. (see Saunders et. al., ibid)

The basic goal of quota sampling is the selection of a sample that is a true replica of the population about which one wants to generalise. With proper controls and checks, quota sampling is likely to yield accurate results. However, since quota sampling is not based on random sampling, the sampling error as well as standard error or the margin of certainty cannot be estimated (see Thakur, D. ibid).

**Purposive Sampling** is a non-probability sampling procedure in which the judgment of the researcher is used to select the cases that make up the sample. This can be done on the basis of extreme cases, heterogeneity (maximum
variation), homogeneity (maximum similarity), critical cases or typical cases. As the sample selection is based on researcher's judgment, Saunders et. al (2003) also refer to it as judgmental sampling. This aspect is also highlighted by Neuman (2000) who advocates that this technique is often used in Case Study research (where very small samples are equally effective) or when the researcher wishes to select cases that are highly informative. However, Patton (2002), forcefully holds forth that the logic underlying the strategy for selecting cases for a purposive sample should be dependent on the research questions and research objectives. To him, the need to select information rich cases in purposive sampling is as significant as the need to be statistically representative in probability sampling. The strategies for purposive sampling, as are more commonly employed, have already been indicated in Fig: 5.3 and their significant aspects have been examined in the paras that follow:

i) Purposive sampling based on extreme case or deviant sampling focuses on unusual or special cases on the basis that the data collected about these unusual or extreme outcomes will enable the researcher to gain more knowledge and to answer the research question and to meet the research objectives most efficiently and effectively. The underlying presumption is that inferences drawn from extreme cases is bound to be relevant in understanding or explaining more typical cases (see Patton, 2002). Similarly, Peters & Waterman's (1982) research on excellent companies had its origins in a purposive sample of extreme (excellent) companies.
ii) **Purposive sampling based on Heterogeneous or maximum variation sampling** equips the researcher to collect and collate data to describe and explain the key themes that can be observed. A sample based on maximum variation or heterogeneity is bound to be small and such a small sample may contain cases that are wholly different, thus masking contradictions instead of revealing key themes. Yet, Patton (2002) argues that this is in fact a strength. Any noticeable patterns are likely to be of special interest and value and illustrate the key themes. In addition, the data collected is expected to enable the researcher to record and substantiate uniqueness. Patton (2002) has strongly suggested that, to ensure maximum variation within a sample, the researcher must specify the requisite diverse characteristics (sample selection criteria) prior to selection of the sample.

iii) **Purposive sampling based on homogeneous sampling or maximum similarity** is focused on one particular subgroup in which all the sample members are similar. This enables the researcher to study the group in great depth and to ensure that the full variety of responses are obtained from the group.

iv) **Purposive sampling based on critical case sampling** selects critical cases on the basis that they can make a point dramatically or because they are highly significant. The centrality of efforts in data collection is to understand what is happening in each critical case so that logical generalisations can be arrived at. Patton (2002) outlines a number of leads which suggest critical cases. These are summarised in the form of self-check questions:
• If it happens there, will it happen everywhere?
• If they are having problems, can you be sure that everyone will have problems?
• If they cannot understand the process, is it likely that no one will be able to understand the process?

v) *Purposive sampling based on typical case sampling* is often employed as part of a research project to provide an illustrative profile on the basis of a representative case. Such a sample enables the researcher to provide an illustration of what is ‘typical’. It is not meant to be “definitive”.

On the whole, Gupta, S. (2001, ibid, p. 111) finds considerable merit in the technique of purposive sampling. According to her, this method can prove very useful under proper controls and safeguards. If the researcher has full knowledge of the universe, this method ensures proper representation of a cross-section of the various strata of the universe and is accordingly more economical and less time-intensive. *It is the method of choice where randomisation is not possible.*

**Snowball Sampling** is a non-probability sampling procedure in which subsequent respondents are obtained from information provided by initial respondents. This method is usually resorted to when it is not easy to identify members of the desired population, for example people who are working while claiming unemployment benefit (see Saunders et al (2002)). The researcher, in order to operationalise this technique, is required to:
1) Establish Contact with one or two cases in the population.
2) Request these cases to identify further cases.
3) Ask these new cases to identify further new cases, so on and so forth.
4) Discontinue the process when either no new cases are forthcoming or when the sample size reaches manageable proportions.

Establishment of the first contact is the principal hurdle. Once the researcher has accomplished the first contact, these cases identify further members of the population, who then identify other members of the population and the sample snowballs. Hussey and Hussey (1997, ibid, p. 147) also associate snowball sampling with phenomenological studies where it is essential to include people with experience of the phenomena being studied in the sample e.g. the phenomenon of redundancy. However, for this technique, "the problems of representativeness are huge, as respondents are most likely to identify other potential respondents who are similar to themselves". Then, the next difficult phase is to locate these new cases, in turn. Yet, wherever, researchers encounter acute difficulty in identification of the relevant population, snowball sampling provides the only hope for study and analysis.

Self-selection sampling is a non-probability sampling procedure in which the case, usually an individual, is allowed to identify his/her desire to be part of the sample. In this technique, the researcher publicises his need for cases, either by placing an advertisement in print or TV media or by asking them otherwise to
participate in the study. The researcher then proceeds to collect data from the respondents. It is self-evident that the cases which participate in the study through self-selection do so because of their special feelings or views about the research question or stated objectives.

**Convenience Sampling.** It is a non-probability sampling procedure in which cases are selected haphazardly on the basis that these are easiest to obtain, e.g. the person interviewed at random in a shopping centre for a TV programme. The sample selection process is allowed to go on till the desired sample size is reached. The technique, though widely used, is liable to bias and influences beyond the researcher's control as the cases are picked up only because of the ease of access.

**V.9 Concluding Observations**

*In conclusion*, we may observe that the choice of sampling techniques depends, to a great extent on the feasibility and sensibility of collecting data to answer the research questions to meet the research objectives. Sample size and the technique used are also influenced by the availability of resources, in particular financial support, and the time available to select the sample and to collect and analyse the data. In the case of qualitative data, it is the logical relationship between the sample selection technique and the purpose and focus of research that is important (Patton, 2002). All probability sampling techniques necessitate some form of sampling frame, so these are often found to be more time consuming than non-probability sampling techniques. Where, it is not possible to construct a sampling frame, non-probability sampling techniques provide the only
option. Non-probability sampling techniques also have the merit of providing the
researcher to select his sample purposively according to his judgment, as well as
to reach difficult-to-identify members of the population. For many research
projects, a combination of different sampling techniques may be used in the
same study. Finally, the researcher must bear in mind that all his choices are
dependent on his ability to gain access to organisations. *Thus, all preceding
considerations must therefore be tempered with an understanding of what is
practically possible* (Saunders et al. 2003). The totality of these considerations
have also been taken into account by us in the choice of the Research Method
and that of the Sampling Technique as elucidated by us in detail in Chapter VI
(Para VI.4; pp. 383-392) that follows. The procedure employed for data collection
through the well-known technique of "Questionnaire Survey" finds special
mention in the aforesaid Chapter VI (Para VI.5; pp. 393-394).