

# CHAPTER 3

## RESEARCH METHODOLOGY

### 3.1 Introduction

Research Methodology is a term made of two words Research and Methodology where, Research means checking the standard of existing identified problem through the combination of multiple tools and techniques which gives an outline of personalized selected methods related to specific study under which research will go to fulfill the objective or set of objectives. Methodology includes different segments starting from collection of both primary and secondary data followed by analyzing data with the help of different statistical techniques and then the interpretation of outcomes of specific applied techniques to evaluate the actual status of problem.

Research Methodology is a strategy or plan of action that links methods to outcomes-governs our choice and use of methods, can also be referred as research design utilizes to adopt specific set of techniques to abstain from mistakes which might waste time and money and save from misconception in collecting and analyzing data. Mixed Research which includes both the quantitative and qualitative tools in order to reach destination of purpose of study has been selected as potent way to explore facts about the skill, skill trainings and its overall impact on the cross sectional society.

In this study both the Quantitative as well as Qualitative Research techniques have been used. One side where the qualitative methods helps in developing research instrument and making interpretation of outcome, other side Quantitative methods provided assistance in going across group of targeted population. Aid has also been given by quantitative method in collection of data on the basis of research survey and analysis of gathered data.

## 3.2 Research Approach

In order to evaluate the thought process, level of awareness, and the perception towards skill based trainings among selected population regarding, descriptive research has been adopted.

A descriptive research is a set of information collected without changing its environment. Descriptive research, involves researchers of interaction with the participant, carry out surveys or interviews to gather the necessary information. Sometimes, the Descriptive research must have observational study where the researcher has no interaction with the collection of participant, but the data is done using existing records exist .The descriptive research are generally the best methods of collection of information which can demonstrate the relationships and the co- Relationship survey on the relationship between the variables and describe the world as it exists.

Descriptive research is all about describing condition and people who take part in the study. More simply put, Descriptive research describes and interprets “what it is”. Descriptive research refers to the type of research question, design, and data analysis that will be applied to a given topic. Descriptive statistics tell what is, while inferential statistics try to determine cause and effect.

According to Best and Kahn (2007), It is concerned with the condition of relationships that exists: practices that prevails; beliefs and process that are going on; effects that are being felt; and trends that are developing. “The term descriptive research has often been used incorrectly to describe three types of investigation which are superficial similar. Each of them employs the process of disciplined inquiry and analysis of empirical data. According to Dr. Y.P. Aggarwal (2008) descriptive research is devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation. Descriptive research ultimately determines the type of approach necessary to complete an accurate assessment of the topic at hand. There are three methods a researcher can take up a descriptive research project viz. Observational, Case study, Survey.

This research includes different types of surveys methods like interviewing people one to one, handing out questionnaire, Surveys with cross-sectional and longitudinal studies using questionnaires and structured interviews for data collection. These methods are intent of generalizing from a sample to particular set of people. All of the surveys offer relatively quick ways of collecting information, .Surveys offer the opportunity to execute studies with various signs and each of which is suitable for addressing particular research questions.

### **3.2.1 Significance of the Descriptive Survey Method**

The descriptive research is conclusive in nature and, it is concerned by the characteristics of the persons as well as the characteristics of the whole of the sample of the latter. The descriptive research gathers information quantifiable which can be in the form of tables along a continuum in digital form for the statistical inference on the target audience who help to reveal and to measure the strength of the opinion, the attitude or the behavior of a target group compared to a given subject.

This information could then be studied at the nominal value, the measurement of trends over time, or for more advanced analysis of data such as drawing correlations, the segmentation, the comparative analysis and other statistical techniques.

Descriptive research utilizes data collection techniques that yield reports concerning the measures of central tendency, variation, and correlation. The combination of its characteristic summary and correlation statistics, along with its focus on specific types of research questions, methods, and outcomes is what distinguishes descriptive research from other research types

### **3.2.2 Variables**

The purpose of Descriptive Research is to explain variance in the world that means the difference of opinion. Variance is simply the difference of conditions or characteristics that the researcher manipulates, control, or observes. Variables are names that are given to the variance. A variable is either a result of some force or is itself the force that causes a change in another

variable. In experiments, these are called dependent and independent variables respectively.

Independent variables are important to understand because they are the basic units of the information studied and interpreted. Researchers carefully analyze and interpret each variable to manipulate or control to ascertain their relationship to observed phenomena.

The dependent variables are the conditions or characteristics that researcher introduces, removes, or changes Independent variables.

A research plan is the document of the study which defines the types of study which is descriptive interrelated, semi- experimental, experimental, etc and also of the sub- types which is descriptive longitudinal, research question, the assumptions, the independent and dependent variables etc. Research design is the framework that has been created to search for answers to the research questions.

One can analyze a chosen topic with different methods of analysis like Multimethodology or multimethod research and mixed methods research.

Multimethodology or multimethod research is conducted with two or more research methods, each conducted rigorously and complete in itself, in one project. The results are then triangulated to form a complete whole. The main strength of multimethod approach is to obtain a different level of data which provides a more comprehensive picture of the findings.

Multimethod research can take a number of forms, reflecting the many possible permutations of methods drawn from the broad categories of qualitative, quantitative, and formal approaches. MMR can combine discrete techniques within one of the families of methods.

While mixed methods research incorporates mixing of qualitative and quantitative data, methods, methodologies and strategies within a single project. The strategies are supplemental to the major or core method and provide clues that are followed up within the core method.

One of the most advantageous characteristics of conducting mixed methods research is the possibility of triangulation, i.e., the use of several means

(methods, data sources and researchers) to examine the same phenomenon. Triangulation allows one to identify aspects of a phenomenon more accurately by approaching it from different vantage points using different methods and techniques.

“Involved integrating quantitative and qualitative approaches to generating new knowledge and can involve either concurrent or sequential use of these two classes of methods to follow a line of inquiry.” – Creswell et al (2003).

### **3.3 Quantitative Research Approach**

Quantitative methods are used for objective measurements and the statistical analysis of data collected through polls, questionnaires, and surveys etc. Quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon. Quantitative research works in numbers, logic, and its objective. It focuses on numeric and unchanging data for connecting reasoning rather than deviating reasoning.

Quantitative research designs are either descriptive that is subjects usually measured once or experimental that is subjects measured before and after a treatment.

A descriptive study establishes only associations between variables while an experimental study establishes causality.

Quantitative research deals in numbers, logic, and an objective stance. Quantitative research focuses on numeric and unchanging data and detailed, convergent reasoning rather than divergent reasoning.

Before designing a quantitative research study, One must decide whether it will be descriptive or experimental as it will decide how to gather, analyze, and interpret the data. A descriptive study is governed by the following rules:

- subjects are generally measured once;
- the intention is to only establish associations between variables;
- Study may include a sample population of hundreds or thousands of subjects to ensure that a valid estimate of a generalized relationship between variables has been obtained.

An experimental design includes subjects measured before and after a particular treatment, the sample population may be very small and purposefully chosen, and it is intended to establish causality between variables.

Quantitative research uses numbers to test hypotheses and make predictions and finally provide description regarding an event by using figures. Researcher has the opportunity to use advanced and powerful statistical tests to ensure that the results have a statistical relationship, and are not just a mere observation.

Strength of quantitative methods is to remove a certain level of biasness by examining numbers. When a specific subject is studied a specific variable is defined and then it leads to the results which can be applied to larger populations.

Trochim and Land (1982) defined quantitative research design as the glue that holds the research project together. A design is used to structure the research, to show how all of the major parts of the research project—the samples or groups, measures, treatments or programs, and methods of assignment—work together to try to address the central research questions.

### **3.3.1 Qualitative Research Approach**

Qualitative Research is primarily subjective in approach. It is used to gain an understanding of hidden reasons, opinions, and motivations. When we use qualitative research methods, the emphasis is put on the natural setting and the points of views of the participants.

The qualitative research aims the audience range of behavior and their perceptions on a subject or specific questions. It uses in-depth studies of small groups of people to guide and support the construction of assumptions. The results of the qualitative research are descriptive rather than predictive.

Qualitative research does not introduce treatments or manipulate variables rather; it lets the meaning emerge from the participants. It is more flexible as it can adjust to the setting of concepts, data collection tools, and data collection methods of research progresses.

Characteristics of Qualitative Research are Naturalistic inquiry, Emergent design flexibility, Purposeful sampling, Qualitative data, Personal experience and engagement, Inductive analysis and creative synthesis.

The strength of the qualitative research is its ability to provide textual descriptions of complex a matter of a given research. It provides information on the side "human" a question - that is, behaviors often contradictory, beliefs, Opinions, emotions and the relations of individuals. Qualitative research are also effective in the identification of intangible factors , such as the social standards , the socio-economic status , the roles of kind , the ethnic origin and religion , whose role in the question of research may not be obvious .

Although the results from the qualitative data can often be extended to persons with similar characteristics to those of the population studied, winner an understanding rich and complex of a social context specific generally takes priority on creating data that can be generalized to other geographic areas or populations.

Qualitative research methods focus on discovering and understanding the experiences, perspectives, and thoughts of participants—that is, qualitative research explores meaning, purpose, or reality (Hiatt, 1986). In other words,

### **3.3.2 Mixed Research Paradigm**

The term ‘mixed methods research’ has been used to refer the use of two or more methods in a research project yielding both qualitative and quantitative data.

A key characteristic of the research on the mixed methods is its diversity or the methodological style which is often reflected in the research of superior quality compared to mono method research. Research on the mixed methods will be crowned with success that to study more investigators and to contribute to advancing its concepts and as they practice regularly this. The Joint Studies Method has emerged from the wars of paradigm between the approaches of qualitative and quantitative research to become a mode widely used of inquiry. Depending on the choices made in four dimensions, mixed methods can

provide an investigator with a lot of design choices which involve a series of sequential strategies and simultaneous.

Paradigm questions are a major concern in research on the mixed methods. Choice of a correct paradigm is considered as a necessary step to justify the use of mixed methods. Yet, there is still a disagreement on what constitutes appropriate paradigms.

Three approaches to paradigm choice have been identified here as paradigmatic - approach, the approach of multiple paradigm and the single paradigm. It was discussed that the position of single paradigm is the only defensible approach. This approach has been widely applied in the field of the evaluation of the programs and the Social Research. It does not suffer from the limitations of pragmatism and transformation of paradigms discussed above, and supports the use of mixed methods. It has the potential of development to provide a paradigm that is needed by the research of mixed method.

Research on the mixed methods is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it is based on philosophical assumptions which guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or a series of studies. Its central principle is that the use of quantitative and qualitative approaches in combination provides a better understanding of the problems of research that is only approach

According to Johnson and Onwuegbuzie (2004), Mixed methods research is formally defined here as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study. Mixed methods research also is an attempt to legitimate the use of multiple approaches in answering research questions, rather than restricting or constraining researchers' choices (i.e., it rejects dogmatism).

### **3.3.3 Advantages of Mixed Research**

The use of mixed method research provides a number of advantages, namely:

1. **Mixed-methodology** research begins with a qualitative observation of an event or phenomenon. Qualitative study offers the opportunity to provide subtle details that outline a problem.
2. **Broader Perspective** A mixed-approach design uses the strengths of both methodologies to provide a broader perspective on the overall issue.
3. **More Data** Mixed-method design expands the research in a way that a single approach can't. The process of offering a statistical analysis, along with observation, makes the research more comprehensive.
4. **Better Approach** Provides an approach for developing better, more context specific instruments.
5. **Strength** By using both types of research, it Provides strengths that offset the weaknesses of both quantitative and qualitative research.

For the present research work a blend of descriptive and exploratory research design is being used. By using systematic random sampling approach, Mandla District is being selected as a sample from the universe that is Madhya Pradesh. Sampling unit is youth population of Mandla District, as to fulfill the objectives of the research the target is to assess the credibility of skill based trainings over a sample population.

### **3.4 Data Collection Methods**

Collection of data can be done through two ways in which first is primary data and second is secondary data. In the completion of study and in order to reach unbiased conclusion both sort of data has been required and are being used.

#### **3.4.1 Primary Data**

Primary data collection consists of a collection of original primary data using qualitative and quantitative methods. The data which collected should be unique until it is published and no one else has access to it.

There are many methods of collecting primary data. The main methods include:

- **Interviews:** Interviews are one-on-one or small group question and answer sessions. Interviews will provide a lot of information from a small number of people.
- **Surveys:** Surveys are a form of questioning that is more rigid than interviews and that involve larger groups of people.
- **Observations:** Observations involve taking organized notes about occurrences in the world.
- **Analysis:** Analysis involves collecting data and organizing it in some fashion based on criteria you develop.

In this research study to collect primary data, survey is being done through questionnaire. The survey is an excellent way to discover what is a large amount of people think of a particular problem or how a group of people report their behavior. The essence of the method of inquiry can be explained as individuals questioning and then describing their answers. Survey methods of investigation of the collection of primary data is used to test the concepts, reflect the attitude of the people, establish the level of satisfaction of clients, carry out research on the segmentation and a set of other purposes.

As discussed, in the research collection of primary data is gone through Questionnaire “Survey/ Schedule” questionnaire survey. Survey has been conducted by researcher by handing out questionnaire to muster required information. In order to fulfill the cause 500 questionnaire had been handed out and also interviewed some of respondents.

The main focus of using questionnaire is to glean most accurate information which can link to the objective of research, along with the further plan regarding the use of outcomes of questionnaire. Respondents are also made aware about the particular questionnaire and the purpose of research so can get the worthwhile response. Systematically, the gathered responses are being used as the desired information for analysis.

Customized Structured Questionnaire has been used in order to deduct the demographic status of the respondents, their present occupational level, their

awareness level towards the government skill schemes and skill based trainings. Further the inclination and participation of the respondents towards skill based training has been assessed and the status they have achieved on both social and economical ground they have achieved after the participation in various skill based training programmes has been assessed

### **3.4.2 Secondary Data**

The term "secondary data" refers to data that were collected for other studies. For first researcher it is a primary data, but for the second researcher it becomes secondary data. Such data are cheaper and more quickly obtainable than the primary data.

Secondary data analysis saves time that would otherwise be spent collecting data and, particularly in the case of quantitative data, provides larger and higher-quality database. Secondary data available may be entirely appropriate and wholly adequate to draw conclusions and solve the problem. It should note that secondary data can play a substantial role in the exploratory phase to know the research problem and to generate hypotheses. The assembly and analysis of secondary data almost invariably improves the researcher's understanding of various lines of inquiry that could be followed and the alternative courses of action which might be pursued. Secondary data can be extremely useful both in defining the population and in structuring the sample to be taken.

A secondary data sources should precede any primary research activity and might be secondary data is sufficient to solve the problem, or it may help the researcher in better understanding of the problem undertaken.

Before making use of secondary data there is need to evaluate both the data itself and its source. Particularly serious attention should be paid to definitions used, measurement error, source bias, reliability and the time span.

In this study, Help of census surveys of 2011 and previous years along with various data available through government websites has been used in this research.

## **3.5 Sampling Design**

As it is impossible to study the whole of one of the Researchers of the population in general rely on the sampling to acquire a part of the population to achieve an experience or study of observation. It is important that the selected group is representative of the population and non-biased in a systematic way. A procedure established before data are collected to obtain a sample of a given population is known under the name of sampling design. The basic concept in the sampling design is the sampling unit, which is the minimum unit of observation of the information on the operating variables. The sampling unit must be clearly defined for the construction of the basis of the survey.

The Sampling design addresses the issues like what statistics are to be produced?, for which population?, when, and with what accuracy?; what data are to be collected for which units of the population of interest, and what are the methods by which those data are to be collected and processed to produce the required statistics.

The term "sampling design" may be restricted to mean all steps taken in selecting the sample; the term "sample design" cover in addition the method of estimation; and also

Other aspects of the survey "Sampling design" is sometimes used in a clearly defined sense, with reference to a given frame, as the set of rules and specifications for the drawing of a sample in an unequivocal manner.

### **3.5.1 Target Population and Sampling Location**

The target population is the total group of individuals from which the sample can be drawn. In some types of research the target population could be as wide as all human beings, but in other types of research the target population could be a smaller group.

The sampling is the selection process of the participants of the population. If the target population is much low, the sample may be more small but always be representative. There must be enough participants to make the representative

sample of the target population and also the sample must not be so large that the study takes too much time or too expensive.

The main purpose of this research is to check the level of awareness of Mandla District Youth towards the skill based programmes and their level of inclination towards the same. further the analysis is being performed over the respondents on the type of training they have received and the effect those programmes has produces over their socioeconomic conditions.

### **3.5.2 Characteristics of Respondents**

This segment tells the about the characteristics of the respondents. In the survey, women of selected area are the respondents.

**Size:** In order to survey, 500 questionnaires have been distributed to the target population. 350 questionnaires have been filled completely out of 500.

**Location:** Mandla District in Madhya Pradesh

**Respondents:** Majorly youth selected randomly without being biased or without any sake of convenience.

**Sample size:** Number of respondents who have surveyed or included in research refer as sample size. In this research, sample size of 500 has been selected initially. But only completely filled questionnaire have been taken into consideration which are 350.

### **3.6 Administration**

The questionnaire of survey “Survey Schedule” customized by researcher himself. Survey has been conducted by self. In order to get right information which can provide aid in relation to the objective of research, respondents has been made aware verbally about the purpose of study. Instruction of required personal details and other points related to questionnaire has also been explained to the respondents. Some questionnaires which are found incomplete were removed and not taken as a part of study.

### **3.7 Research Instrument**

Before a researcher collect any data he/she need to design research instruments that is the tools which will used to collect the data. These tools are fact finding

strategies. They include Questionnaire, Interview, Observation and Reading. The researcher must ensure that the instrument chosen is valid and reliable. Whatever procedure one uses to collect data, it must be critically examined to check the extent to which it is likely to give you the expected results.

The instrument used to collect data may be created by the researcher or based on an existing instrument. If the instrument is created by researcher then the process used to select the questions should be described and justified. If some existing instrument is taken up then the background of the instrument should be described. For e.g. If a Likert scale is used, then scale should be described and If the study involves interviews, an interview protocol should be developed that will result in a consistent process of data collection. Instruments should be placed in an appendix, not in the body of the text. Most qualitative studies include both a demographic survey to develop a picture of the participants, and an interview protocol. If the instrument is researcher created, a pilot study should be conducted to test the instrument.

For effective and flawless data collection, survey, interview and case study Instruments were extensively used. Survey method is the most extensively used technique while interviews are an appropriate method to use when exploring practitioners perspectives due to the qualitative nature of the information. Case study methods are used for an in-depth investigation of a single individual, group, or an event. It provides a systematic way of looking at events, collecting data, analyzing information, and reporting the results.

A pilot study is a scientific tool helping researcher to conduct a preliminary analysis. Before taking up main study it is a small-scale practice of research design and work as a smaller scale version of the experiment.

Pilot Test can be based on quantitative and/or qualitative methods and large-scale research studies might use a number of pilot studies before conducting the main survey. There are majorly three steps involved in Pilot Test

1. Step-1: The first phase of a pilot Test might involve using in-depth interviews in a large-scale questionnaire survey.

2. Step-2: Second Step Involves Designing questionnaire that is wording and the order of the questions, or the range of answers on multiple-choice questions.

3. Step-3: Final Step Involve testing the research process, e.g. the different ways of distributing and collecting the questionnaires.

Once designing the questionnaire was done for reliability analysis to ascertain quantifications for which we have taken up Pilot test where a diminutive group of reliable respondents needed to reply the questions being asked in the questionnaire.

We had 100 sets of questionnaires which had been distributed and recollected for the purpose of pilot testing.

Though completing a pilot study successfully is not a guarantee of the success of the full-scale survey yet pilot study findings may offer some indication of the likely size of the response rate in the main survey. Furthermore, other problems or headaches may not become obvious until the larger scale study is conducted.

### **3.8 Scale of Measurement**

Scale of measurement refers to how variables are measured. There are four different scales of measurement:

- **Nominal:** Classifies variables simply in terms of their names and the categories cannot be ranked.
- **Ordinal:** The ordinal scale has the property of both identity and magnitude and it has an ordered relationship to every other value on the scale. It contains non-numeric categories that can be ranked, such as “low,” “medium,” and “high.”
- **Interval:** The interval scale of measurement has the properties of identity, magnitude, and equal intervals. It contains categories in which the actual distances, or intervals, between categories can be compared.
- **Ratio:** The ratio scale of measurement satisfies all four of the properties of measurement: identity, magnitude, equal intervals, and a minimum

value of zero. Like the interval-scale variable, however it has a non-arbitrary zero value.

In this research, nominal scale was utilized.

### **3.8.1 Nominal Scale**

Nominal Scale is the lowest measurement level you can use, from a statistical point of view.

A nominal scale, as the name implies, is simply some placing of data into categories, without any order or structure. Nominal Scale is a discrete classification of data, in which data are neither measured nor ordered but subjects are merely allocated to distinct categories: for example, a record of students' course choices constitutes nominal data.

A nominal scale of measurement deals with variables that are non-numeric or where the numbers have no value. Nominal scale is a qualitative categorization according to un-authoritatively mandated distinctions.

### **3.8.2 Data Processing**

After recollecting filled questionnaires with the required data, it has been processed, the survey questionnaires is analyzed. There are several steps involved in analysis, such as checking, editing, coding, and transcribing, as well as designating any special or eccentric treatments of data afore they are analyzed. After viewing the Question Summaries, One can create rules to answer more specific questions about data. Filter, Compare, and Show rules helps to focus in on specific subsets of the data, so that analysis of results is most meaningful.

It is important to keep in mind that data analysis is an iterative process. Often results from one type of analysis may yield new questions, resulting in another round of data analysis

There are several procedures we can use to analyze our needs assessment data. Two basic types of analyses methods are

**1. Descriptive Statistics:** Descriptive statistics describe and summarize the quantitative information from your survey about your sample. It includes such summary measures as:

- Mean (the average value)
- Median (the value at which half of the values are above, and half are below)
- Frequencies (the percentage of responses that fall into a set of categories.)

**2. Cross-tabulations:** Simple cross-tabulations allow you to compare the results of two mutually exclusive groups of respondents. We need not to stop at two categories we can compare as many groups as we like.

### **3.8.3 Data Checking**

Data checking involves eliminating unacceptable questionnaires. There are several reasons why a questionnaire may be unacceptable for use in a study like it might be incomplete, instructions not followed, little variance, missing pages, past cutoff date or respondent not qualified.

There are a number of ways to check the Questioner Data. Some of which are outlined below.

- **Reliability:** the degree to which a questionnaire will produce the same result if administered again, or the “test-retest” concept. It is also a measure of the degree to which a questionnaire can reflect a true change.
- **Validity:** the degree to which a questionnaire reflects reality. There are a number of different facets to validity.
- **Internal validity:** the degree to which questions within an instrument agree with each other, i.e., that a subject will respond to similar questions in a similar way. It also affects the likelihood of producing false positives and false negatives.
- **External validity:** the ability to make generalizations about a population beyond that of the sample tested.

- **Sensitivity:** The degrees to which the instrument can identify a true positive, e.g., accurately identify a person who does have the condition.
- **Specificity:** similar to sensitivity, this is the degree to which the instrument can identify a true negative. e.g., correctly identify the people who do not have the disease. Sensitivity and specificity are another side of the coin from internal validity.
- **Statistical validity:** this is related to internal validity, and assesses whether the differences in the questionnaire results between patient groups can appropriately be subjected to statistical tests of significance.
- **Longitudinal validity:** whether a questionnaire returns the same results in a given population over time, assuming all else remains equal
- **Linguistic validity:** whether the wording of the questionnaire is understood in the same way by everyone who completes it.

### 3.8.4 Data Editing

The second step is to edit the data by examining the questionnaire to identify answers unreadable, Incomplete, incompatible, unsatisfactory , equivocal answers that will be scrapped instead of filling the missing value to reduce to the minimum the replication bias thus strengthening the precision and the accuracy of the data. Data editing can be performed manually, with the assistance of a computer or a combination of both.

Data editing is an under-described, albeit immensely important, component of the data collection process. Data editing processes and procedures are governed by an interaction between available computer technologies and decision-making ‘rules,’ themselves often a function of the idiosyncrasies of the survey instrument. There are various data edited methods like:

- 1. Interactive Editing:** The term interactive editing is commonly used for modern computer-assisted manual editing. Interactive editing is a standard way to edit data. It can be used to edit both categorical and continuous data.
- 2. Selective Editing:** Selective editing is an umbrella term for several methods to identify the influential errors, and outliers. Interactive editing are allocated to

those records where it has the most effect on the quality of the final estimates of publication figures.

**3. Automatic Editing:** In automatic editing data are edited by a computer without human intervention.

While effective and appropriate data editing procedures are designed to enhance the quality of survey data and minimize error, many issues must be weighed when selecting and developing an effective data editing system that promotes data quality while effectively utilizing available resources.

### **3.8.5 Data Coding**

Once we completed our survey checking and editing; now we need to minimize bad data as best we could so we may need to code some responses in order to enable analysis. Data Coding is the process of assigning numeric or alpha information to question responses that do not ordinarily return to the researcher in that format.

Coding typically assigns a number to answers that do not already have them so that statistical techniques can be applied. Types of data that usually require coding are often demographic – age, gender, marital status, household size. Some of the original data may already be numeric such as age, but coding will provide for an aggregation into much smaller and therefore more useful categories.

In research, coding of qualitative data with help of Likert scale has been done as if participant has perception in complete resemblance with whatever asked it denoted as 5, if respondent is mostly agree it denoted as 4, when there is not any perception or certain idea it denoted as 3 if respondent is rarely agree about the information asked denoted as 2 and when very rarely agree denoted as 1. SPSS has been used for both data coding as well as Data transcribing.

### **3.8.6 Data Transcribing**

Data recorded from verbal interaction with respondents to be transcribed that is to convert speech sound into words as accurately as possible. Transcribing involves listening to recorded data and typing out exactly what was said. Sometimes transcribe a section of text into electronic form either by scanning it

with an optical character recognition program, or by directly typing it on computer.

#### Data transcribing Essentials

- **Consistency**
- **Completeness**
- **Correctness**

**Consistency** in transcribing makes work understandable, and makes it possible to turn it into displayable. How you transcribe features of the layout and formatting of your text should remain consistent throughout your submission

**Completeness** means that we have transcribed all the relevant sections of the text that were given, and checked to ensure that we have not missed any pages, paragraphs, sentences, lines, or words. .

**Correctness** means that we have respected the wording, spelling, capitalization, italics, bolding, punctuation, etc. of the original text, and recreated it accurately in your submission.

### **3.9 Data Analysis**

Analysis of Data is a process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains.

While data analysis in qualitative research can include statistical procedures an analysis and becomes an ongoing process where data is continuously collected and analyzed almost simultaneously.

The form of the analysis is determined by the specific qualitative approach taken and the form of the data.

An essential element to ensure the integrity of the data is the accurate analysis and appropriate search results. Incorrect statistical analyzes distorts the scientific results which mislead the casual readers and can negatively influence

the perception of the public. The issues of integrity are equally relevant for the analysis of non-statistical data as well.

Although the methods of analysis may differ by scientific discipline, the optimum stage to determine appropriate analytical procedures occurs early in the research process and should not be done later. .

The main objective of the analysis is to make the distinction between events that occurs either as reflecting a real effect against a false. Any bias occurring in the collection of data, or the selection of the method of analysis, will increase the likelihood of pull a biased conclusion.

Whether the statistical methods or non-statistical analyzes are used, it must be aware of the risk of compromising the integrity of the data. The statistical analysis is usually conducted on quantitative data, there are many analytical procedures designed specifically for the qualitative material. Whether one studies on a quantitative or qualitative phenomena of various tools are necessary to analyze the data to test hypotheses, discern patterns of behavior, and finally to answer questions of research. The failure to understand or recognize the issues of analysis of the data presented can compromise the integrity of the data.

### **3.9.1 Descriptive Analysis**

The transformation of raw data into a form that make them easy to understand and interpret; rearranging the command and the manipulation of data to generate information is called Descriptive Analysis. The descriptive analysis provides a concise summary of the data. You can summarize data digitally or graphically. The descriptive analysis takes the form of descriptive statistics. The purpose of the descriptive statistics is to summarize a set of quantitative data. Researchers use these statistics to describe or characterize the sample studied. The descriptive analysis is the transformation of raw data into complete information. It is used to determine the main trends of the variables. Ordinary techniques used in the statistics include the measurement of central tendency, average and median. Other descriptive statistics are measures of the

variance and standard deviation. Researchers can use visual tools of Descriptive Analysis, such as bar graphs, Pie Charts and Line graphs.

### **3.9.2 Inferential Analysis**

Inferential analysis, contrary to the Descriptive analysis, is a study to derive conclusions which have been obtained from an experimental study to broader populations. This means inferential statistics attempts to respond to the questions on the populations and samples that have never been tested in the particular experience.

Inferential analysis is anxious to make predictions or inferences on a population from observations and analyzes which means that we can take the results of the analysis of a given sample and then we could generalize to the larger population. To do this, it is imperative that the sample is representative of the group to which it generalizes.

This analysis is required only when a sample is pulled by a random procedure and the response rate is very high. Therefore, this type of analysis is not appropriate when the methods of Non-probability selection are used.

The use of the Inferential analysis is a cornerstone of research, because it is generally difficult, and often impossible, to probe all members of a population or to observe each event. Instead, the researchers are trying to obtain a representative sample, and use it as a basis for more general conclusions.

The present study has used nonparametric test, chi Square test so as to check the association between the studied variables. The test is majorly used to assess the impact of a phenomena or variable over a process or to check the goodness of fit. Below mentioned formula is being used to apply the test on dataset:

$$x^2 = \sum \frac{(O - E)^2}{E}$$

*O = Observed Frequency*

*E = Expected Frequency*

$$E = \frac{RT \times CT}{N}$$

$\epsilon$  = *Expected Frequency*

$RT$  = *The Row Total for the Row Containing the cell*

$CT$  = *The Column total for the Column Containing the cell*

$\epsilon$  = *The total member of observing*

### **Conclusion 3.10**

The research methodologies were used in the accumulation, the analysis and interpretation of data. Software, such as SPSS, has been acclimated to take advantage to do the analysis and the Interpretation.

In the first place, survey by questionnaire is used to obtain more precise information of the vast group of respondents. Other than the primary data, Secondary data such as case studies and journals have been acclimated to benefit the researchers to better understand the overriding the subject to the study.

Target population, sampling frame and location, sampling elements, sampling techniques, and sample size were discussed in the earlier components. Scales utilized in constructing the quantification were additionally expounded. Other than that, data preparation processes such as checking, editing, coding, and transcribing were discussed.

In the next chapter, details laid down about the initiatives so far have been taken in vocational education system in India. Reports, facts and various statistics has supported the argument that over a period of time the level of vocational education in Indian education constitution has raised up considerably.