RESEARCH METHODOLOGY
CHAPTER 3
RESEARCH METHODOLOGY

Research is an extremely vast subject. It is a combination of various activities related to academics, from problem definition to hypothesis to data collection to analysis of data collected and testing hypothesis and conclusions. Technically, it's a technical term. The proposed methodology adopted for the study is a mix of,

- Both Qualitative & Quantitative data,
- Both Primary & Secondary data

to achieve the objectives of my research, which are stated earlier.

3.1 Research Typology

At the onset In this chapter let's quickly discuss about research typology because it is very relevant to what we're going to discuss in next topic, which research design.

Research is of following 3 kinds:

- Exploratory
- Descriptive and
- Explanatory

**Exploratory research**- obviously, aims to explore typically. We would want to explore a certain subject matter about which we know nothing or very little. That is why people explore. We want to surface the key issues from the subject and form a basic understanding as a starting point for further research. As a result exploratory research is usually quite qualitative because in an exploratory phase there is no need to be precise or accurate and that is why quantitative methods are usually not yet applicable.

**At this point second type of research is Descriptive**, meaning to describe. We perform descriptive research on subject matters about which we already know something about. Which we already have a certain level of understanding but we want to know more. We want to be more accurate and precise in our knowledge of it. We want to describe it better and with more accuracy or more depth. That is why we want to perform descriptive studies and because the goal here is to develop better and more accurate
understanding of something. Descriptive studies are generally speaking quantitative it can be qualitative though in some cases.

The third and final research type is explanatory research- depending on what literature you read this research type is also sometimes referred to as causal research or predictive research. There are some slight differences among them. The general idea of this type of research is to look at cause and effect relationships. In other words, how and why would one thing caused something else to occur or change this type of research is difficult to perform because causality is difficult to establish and can usually only be inferred and due to the amount of potential predictor variables there are also somehow related to the deep-end variable. It is difficult to establish causality with 100% certainty. Let's say for now that explanatory research is the kind of research that aims to explain causal relationships variables. So let's keep in mind these three research types.

3.2 Basics of Research Methodology

Let's discuss about the basic idea behind research methodology. The basic steps for scientific research are the types of descriptive research and the relationship between cause and effect and ethics used for any research. Now to start with how can we identify whether a research is scientific or not. It's an interesting topic. Say, we are there at an airport or a railway station and we see people with two different outlooks. One who has a kind of very executive and formal outlook and another person with long hair. Might be, we have a pre mindset that this person might smoke and this is a kind of executive person because he is in a formal dress. But is that a reality. We would definitely say no. A scientific research is only true if you have certain foundations on which you can prove that what you are is stating is correct, i.e. just my preconceived notion, that since this person is having long hairs, he might be a person who smokes. So, the idea behind any scientific researches is finding the basic ethics and the basic foundation stone. Once, we can prove, that, this research or this basis on which we are saying that persons with long hair smoke is true, then, only we can prove that, this is scientific or this is a research which is scientific in nature.

So, there are various steps that are involved under a scientific research. If, we say steps that are involved in a scientific research, we would say there are
five steps that we could classify now. Suppose, we have a scene, where, there are a group of children who are sitting and watching television. However, on television they are watching scenes which are violent in nature. Now, based on this the steps in my scientific research would as follows:

- First is perceived question so my first instinct question would be what is happening around.
- So, what is happening is a kind of question that is being asked. Here, now we try to formulate the hypothesis.

3.3 What is hypothesis?

Hypothesis is a kind of tentative solution to a problem. For Example, We have a problem at hand that is as follows:

- The children who are watching violent scenes on television might become aggressive.
- So, we can formulate a hypothesis that children who watch
  - Violent programs on television become aggressive in nature.

So, that is what we have as our hypothesis, now, which is, what we believe should be a tentative solution to a problem.

- It can be true in reality or it cannot be true.

So, what we have to do is, we will have to test this hypothesis that we have formulated. To test the hypothesis and we have to divide the group into two.

1. We can show one set of children the violent shows on television and
2. Other set of children kind of non violent shows on the television.

So we have two sets of children here.

- One who are seeing violent scenes of the television, Say Group A and
- Other who are seeing non violent scenes on the television, Say Group B and
- Then we try to find out the behaviour of the two groups A and B.
- Then we can see whether the behaviour of children in Group A is more aggressive than behaviour of children and Group B.
- So that is how we test the hypothesis
However, when we formulate the hypothesis, there is a kind of phenomena which is known as confirmation biases. Confirmation biases, means we have a pre assumed tendency to notice things, on which tend to we agree upon, so, for example,

- If we say we have a preconceived notion that people with long hair, smoke then, we would ignore all long hair people.
- All people with long hair, who are not smoking, are a kind of confirmation bias.
- This confirmation bias affects our formulation of hypotheses.
- In this case, we have a preconceived notion that people with long hair smoke but we will ignore all those people with long hair who are not smoking.
- So that is the confirmation bias and
- This confirmation biases affects your formulation of the hypothesis.

**Figure 3.1 Research Process**

We talked about;
- Perceiving the question- The Problem Statement,
- Then formulating the hypothesis.
- That is a tentative solution to the problem that is given.
- Then we try to test the hypothesis.
Finally we draw conclusions and
  o That is what the goal of prediction is.
Here we will try to predict in the second step that children tend to be aggressive, if they see violent shows on television.
  o What we are trying to do in the conclusion is to try to predict the goals.
  o What we are trying to do is we are trying to either approve the hypothesis or disapprove the hypothesis.
  o So if we approve or support the hypothesis, we would say that,
    o Yes all the children who are aggressive in nature are because of the reason that they were watching violent shows on television.
  o If we disapprove the hypothesis, so we would say,
    o No this is not the reason that the children tend to be violent.
  o Then finally, we report our results.
    o That is extremely important, because if we have done some research and if we don’t report it, it would be very difficult to replicate the research.
    o Hence, report helps to replicate that research,
    o So, if we have done a research on a given topic and there is someone else; who tries or wants to do similar research on another topic. He can replicate the results only when there’s a report.
    o If, we have replicated the results or
    o We have reported the results or
    o If we have not reported this result,
      ▪ Somebody else, who is trying to research on the similar topic, won’t be able to replicate the research.
    o So reporting of the result is very important now. This can be done only, if we have a scientific problem at hand.
  o How should we do make out whether a problem is scientific or non-scientific in nature. We need to understand whether a problem is
scientific or empirical or it is non-scientific or non-empirical and it is an important question in research methodology.

How can we do that we have two questions here:

- First question says where does life exist or we could say do life exists on Mars or moon or anything same. So that's our first question.

- Our second question is what life is.

So the first question we are asking, does life exist on moon. Now, this question can be answered based on scientific findings.

1. We can bring in soil samples.
2. We can bring in results from the satellites that we've gone there or images that we have captured for that soil samples.
3. Sample of the region or the mineral content of that region,
4. Availability of water and other parameters,

This is how the same can be done by scientific understanding or it could be called as empirical finding.

However if we say what is life,

1. There can be lots and lots of people who can have lots and lots of views about what is life.
2. If the question cannot be answered with proper justification, we would say it lies in the ambit of philosophy or religion in this case.
3. Therefore it's away from the field of psychology.
4. Apparently, we would say psychology is a science by nature not arts per se because most of the researchers would say psychology deals with understanding of human behaviour.
   a. Therefore it is much more scientific in nature.

Now we have these five steps that; we have mentioned here to understand these five tips. We could apply various methods and these four methods that we could apply are known as descriptive methods.

What do we understand by descriptive method?

Descriptive methods are those methods, which could be explained as follows:

- We have the four methods that will talk about;
  - Naturalistic observation
Laboratory observation

Case studies and

Surveys

Now to start with naturalistic observation means supposedly we want to understand the feeling of a villager when he is in a farm.

- So we would go to the farm and see the villager doing various activities and observe him that is called naturalistic observation.
- So what we are trying to do is we are trying to observe the villager at the farm in his natural environment.
- However, here is the main problem of the observer biasness.
- If the farmer knows that we are doing a research on him and we are constantly observing him in the field his activities might get distorted, and
- That is what is known as observer biases because of the presences of an observer there, his results are biased. We aren’t observing exactly what they should be so that becomes the main problem of naturalistic observation.
- There are some of the remedies that have been used to avoid this observer biases
  - First is using one-way mirror
    - One-way mirror means the observer can see the participants but the participants cannot see the observer.
  - So it's a kind of one-way mirror
    - We could see the participants what they are doing,
    - But the participants won't be able to see the observer.
    - So that is one method say it is a participant observation
      - What we do in this method is rather than bringing it to the information of the farmer that we are an observer or we are a researcher doing a research on him.
      - We would become another farmer and go down in the field with the same farmer and then try to observe what he is doing
• So that is what is known as participant observation.
• We become a part of the situation of the person and then try to observe what he is trying to do
  o The next is use of blind observers.
    ▪ Blind observers means that even we are not aware we are there.
    ▪ We are in the farm even we don't know why we are there in the farm after we see the farm and come back and
    ▪ That we were there because we wanted to do the research or see the behaviour of a farmer in the farm’s environment, so that is what is called blind observer.
    ▪ It means observer himself does not know what does this role when he is going to the field.
  o So these are some of the major problems that naturalistic observation method faces and these are some of the remedies that are done for the solutions of the problems due to naturalistic observation.

The 2nd is laboratory observation.

• Laboratory observation means if there is a toddler who is trying to see himself in the mirror and checks his activities
  o What he is trying to do and
  o Why mirror is showing exactly the same things
  o Why he is doing
• It is a kind of inquisitiveness that is going around in the child’s mind.
• That could be very well understood in the laboratory settings because;
  o In the laboratory settings we can have a mirror and a child there and we can see the activities of the child
  o We can observe the findings but the main problem again here is;
Since the person is in the laboratory settings his observations and his responses might get diverted or biased
- because he knows that he is under observation
- however these two methods are very well used to formulate hypotheses

So to formulate hypothesis observation in both naturalistic and laboratory observations are used. The next two methods are
- Case studies and
- Surveys

Now, case studies are one of the most famous methods that Sigmund Freud (an Austrian neurologist and the founder of psychoanalysis) used for his studies of psychoanalysis, rather than studying too many people at a time. Case studies focus on understanding all the details characteristics of a single person. So, one person whom we are studying we would try to get “n” number of characteristics that we could. One detailed analysis of;
- His genetic makeup,
- His historical background,
- His medical background and so on.

So we would try to include all kind of behaviours under a certain phenomena for a single person and that is known as case study. One of the interesting case studies that were done was on Phineas P. Gage (1823-1860). This is considered a very interesting study. The reason being, this person met with an accident. After the accident, there was a rod that crossed his upper portion of the left side of the mouth and it went through his right side of the skull. It was a metal rod and despite of that that person survived after the surgery. This person survived but the response that this person gave after he met with an accident was very different. That is a kind of a very unique case study, we would say. You cannot, kind of duplicate such case studies. So case studies can be very unique by nature. They are specifically used for personality disorders, like, dissociative disorders so each person gets a very unique case study.
The next method is surveys. Surveys are usually used in the areas where you cannot intrude in the privacy of a person. So if there are some kind of personal issues that are happening around in the family, what could be done as you cannot solve those by observation. A person might not be ready to give answers in case study. However, in the case of surveys if similar questions are asked about similar personal issues and discussed with them in the form of interview’s question. It is okay and or any other similar forms. They would be kind of happier to answer those questions rather than if they are being observed or they are being judged individually for the case study.

Therefore survey provides a broad ambit for the research. There is another benefit of survey that you can apply it on huge number of population. The biggest drawback of the Cases study is, if you are dealing with people one by one, how many persons would you, be able to cover in a day. Whereas, with the help of surveys, you can provide questionnaire to all the hundred people sitting in the chamber and all of the 100 people can answer those at a single go. This is how; you can apply surveys on huge number of population.

Another benefit of survey is you can randomly select people. Random selection is again an important attribute of the surveys, because if we say, we want to observe students from grade 1 to 5 rather than assessing all the hundred students of each class. We can go for twenty students from each class and that would be a kind of sample survey or we have done a random selection for this survey, so that is, one of the benefits that survey technique has.

Now we have talked about survey, case studies, laboratory observations and naturalistic observations all these imply descriptive statistics.

However it is important to note that rather than doing a research which is descriptive in nature what we are trying to find here relationship.

Relationship by means of cause and effect so if we can see the weather is dark today. It might rain or if there are dark clouds. So that is something we are trying to do a cause-effect relationship.

- The causes is, the clouds here and
- Because of that, the effect would be rain.
- So such relationships could be understood either by
Now let us understand correlation. Correlation means the relationship between element x and y. We would say if we plot a graph you have element x and y the relationship between that element can be given by correlation. Correlation is usually shown by means of scatter diagram.

So, all the values are all the people who we are experimenting on if we try to study individuals. Amount the location of them we would get graphs with different types. Usually the value of correlation varies from minus 1 to plus 1.

- Plus 1 means positively correlated.
  - If one parameter increases the other parameter would also increase.
  - So this is a case of perfect correlation.

- Perfect positive correlation is
  - When X is increasing by one step and
  - Similarly Y is increasing in the same ratio.
  - So that is a perfect positive correlation.

**Chart 3.1 Scatter Diagram- Perfect Correlations**
• However, in case of minus one would be a perfect negative correlation.
  o If X is increasing by a fixed amount and
• Y would decrease by a fixed amount,
  • In that case it is called a perfect negative correlation.

• If all the values are randomly distributed
  • it would be no correlation or
  • zero correlation.

• If they are nearby we would say the value lies
  • between 0 to 1 and
  • it is modestly correlated.

So that is one way of finding relationship and that is what is known as correlation statistic or correlation.

The next important method is experimentation method. So, whenever we say we are using steps in scientific methods, what we are trying to do is experiment. An experiment we would take two sets of groups.

• One is the control group and
• Other is the experimental group

Chart 3.4 Scatter Diagram- Zero Correlation

Now whatever group we take, we would have certain set of variables. Variables are those units which would vary and they could be again classified into three types that is;

1. Independent variable
2. Dependent variable and

3. Confounding variables

Independent variables are the cause of the problem. They are independent, but if the cause is affecting the outcome, that is a dependent variable. They can be intervening variables or mediating variables that could be also known as confounding variables.

There are other factors that affect both cause and effect. If we have a data, we put that data into the variable and we would get some result on the experiment. So let us take again the same example; black clouds lead to rain. Here black clouds would be the cause on the independent variable and they are leading to rain. That is the effect or the outcome or the dependent variable. So this rain is dependent on the type of the cloud.

- If the cloud is black then it would rain.
- If the cloud is not black it would not rain

So that is one example.

The next example will again take that we discussed above, relation of aggression with violent videos. Violent videos lead to aggression in children. Now violent video is a kind of independent variable and that is affecting the level of aggression or we could say the presence or absence of aggression in a child. So aggression would be the outcome and this outcome is being affected by the nature of the video that the person is watching.

It can be violent or nonviolent therefore it would be the cause and the aggression would be the effect of this cause. Now if we say however there can be case that the five children's that we are taking, let's say, two of them belong to a family that is aggressive and the other two children belong to a family as other three children that are non aggressive.

In this case, what would happen the family background would become a confounding variable. Family background is a confounding variable. It's an intervening variable it's not the exact variable which is affecting the amount of aggression in the children. However we could say the children who belong to a family background which is aggressive might turn into more aggressive children. It is a kind of intervening or mediating variable and that affects the outcome. So you have confounding variable that is a family background here.
These are the three types of variables that you can refer. However to understand that we explained there could be control group and experimental group. If we say music affects the scores in a text. If there is music in the surround and that is affecting the test results of a person, what would it be? We could say we can take two sets of people one who are giving examination in absence of music and other who are giving examination in presence of music. Then we will check that difference in the result. Here what is happening is,

- There is a control group to whom no music is being played and
- There is an experimental group to whom music is being played and
- Then we compare the result and
- That is what is happening under an experiment.

However to understand it better there can be two different things

- One is the Placebo effect.
- Other one is the experimenter.

Placebo effect is the effect that we have a firm belief that if we go to Dr. X,Y,Z whatever treatment he gives us we get well. Based on that, if I have a kind of minor headache and I go to Dr. X and he gives me a placebo. Placebo is a kind of drug we would say which has no composition. It is a kind of normal sugar powder that is being put into the capsule. The doctor gives me that sugar powder and says you take this capsule and you will be get well. The next day, I come to doctor I say am not well, that means I am not well because there was some medication given but because of the Placebo effect that is taking place. Similar to placebo effect there is another effect which is known as experimental effect. Under experimental effect what happens is candidates try to perform better because there is presence of the experimenter. So for example, if we are doing a research, on a group of people or on a set of students who are suffering from Alzehimers, we have a set of candidates who are suffering from Alzehimers. We are giving them the second drug dose and we have a strong belief that after this drug dose there should be significant improvement in the results. However the candidate has to do a lot of effort in order to give us good result. He will be ready to do that effort and give us good results. Because, of the experimenter effect if the
experimenter was not there and experimenter did not have a kind of expectation that he would give us good results. Possibility is that result would have not come out. So there can be two types of effects that affect any experiment one is the placebo effect and other is the experimenter effect.

Again when we are doing research or experiment, there can be two types of experiment

- One is single-blind experiment and
- Other is double-blind experiment

Single blind experiment is an experiment in which the participant is unaware about the treatment being given. So all the experiment being conducted so we have a participant here who does not know anything and he is under experiment. The double blind experiments are those in experiments in which neither the participant nor the experimenter know what is going around. There is a third person who is putting up all the settings and both the participant and the experimenter are totally unaware. That is mainly because of the reason to avoid biases in the result. So the other thing is, there are no Placebo and no experimenter effect to avoid those effects.

What is happening here is, a double-blind experiment that has been set up now. We have talked about the various steps and the various types or methods in the experiment. The most important topic that we will discuss now is the ethics. There are certain ethics or rules we would say that are used under research methodology.

1. The first ethics is that people first research second.
   a. That means the first priority is given to people and not research
   b. So all the candidates who are under research settings would be given the best priority.
   c. Participants are allowed to make informed discussions or they are clearly informed about the experiment being conducted
   d. The third case would be debriefing.
      i. Debriefing means you are teaching something and then you are taking a test form at the end
of that lecture and you are not informing that you would be taking the test and the lecture however towards the end you tell them that you are taking a test so that is a kind of debriefing you don’t inform the person prior but once everything is done you try to say you explain the person that we explained you the lecture and based on this lecture we are taking your test

e. The fourth is participants should be allowed to withdraw at any time. You cannot force a participant for any research. If the participant wants to withdraw in the middle of the research he should be allowed to withdraw.

f. The fifth is similar to the debriefing that is done to the participants there should be debriefing of the invigilator as well.

   i. So invigilator should also be debriefed similar to the participants.

g. The next is, in case, while undergoing any kind of research or experiment that the participant is doing. If he comes out with some undesirable consequences, some kind of results which he was not expecting. In case of such undesirable consequences, it is the duty of the examiner or the person who is taking the result or doing the research or the experimenter, to detect the problem and to remove the problem.

h. It is their responsibility to make the participant comfortable. Comfort of the participant is the primary good and that is one of the major ethics that is involved in research methodology.

   i. All the research or all the data that has been collected during the research must be kept confidential. That's another important ethical guideline in the research.
3.4 Types of Hypothesis

Now let’s understand in more details, what is hypothesis and the various types of hypotheses?

As discussed earlier we can say hypothesis is a tentative solution to a problem. What does this mean?

When we say it is a tentative solution to a problem.

Let’s see under research we can define a problem and before finding the results. We are not working on the results; we aren’t working on the data right now. We have just laid down the problem we have done the kind of literature review or the statement of problem. Then what we are trying to understand is, based on the literature review that we have done we try to formulate a hypothesis that is a possible solution of the problem we have.

**Figure 3.2 Hypothesis**
This is the problem of urbanization. Urbanization is more common in smaller cities as compared to bigger cities. So that's our problem. Based on the above, the hypothesis we have laid down is that, the smaller urban centres are growing at a faster pace. So that is my hypothesis. This hypothesis is a kind of tentative solution to the problem statement. We have not yet done the experiment. We have not yet come to the results. Based on just a few reviews of literature and my knowledge, am trying to lay down a tentative solution to the problem.

**Figure 3.3 Concept of Hypothesis**
Once we have this hypothesis, we will work forward with my research and see towards the end whether we approve this hypothesis or we disapprove this hypothesis. That means, this hypothesis that we have drawn, is based on some insufficient evidence and this could be either true or false. So, as we have already known in the previous topic on the types of research methods, we have said, how we move from the theory to the hypothesis under a deductive approach. Under an inductive approach which is ISG we move upwards so this is the inductive approach where we move from the hypothesis to the theory and from moving from hypothesis to the theory. We have to verify such certain facts now when we are laying down the hypothesis.

- It should be clear and precise.
- It should be easily testable and
- More important is the fact that it should be consistent with
  - The data or
  - The information that we are providing

So based on the above we can draw or we can lay down a hypothesis. Now, what is the aim to find, under hypothesis? What is important is three basic aspects;

1. Difference that we are trying to find out
2. The relationship and
3. The interactions

Where they say relationship we are trying to understand the statistically significant relationship

i. That means the difference in the result is caused not by chance but due to statistical reasons.
ii. So that means your wizard is statistically significant and if the difference is caused by chance that means the result is not statistically significant.
iii. So why we say hypothesis is important.
iv. Hypothesis helps us to replicate the research work.
v. It helps us to draw conclusions.
vi. Provides this relationship between the variables.
Now let's understand the basic concept of:

1. Null hypothesis and
2. An alternative hypothesis.

We will understand all types of hypotheses based on one single example so what we try to understand here is the concept of null hypothesis versus the alternative hypothesis, suppose it was really hot weather outside and the best example that we could take here was of an ice-cream. Now this time if a boy formulates a null hypothesis to the fact that eating ice cream has no relation with the running high temperature. So that is the null hypothesis. Eating ice creams has no relation with the running high temperature. However on the other hand the father can have an alternative hypothesis and under the alternative hypothesis he tries to say eating ice cream has a relationship with the running high temperature. That is what an alternative hypothesis is. Now when we try to explain the null hypothesis we can say there is no statistically significant relationship between the two variables. As we said here, that eating ice cream has no relationship with the running high temperature, the researcher basically tries to disapprove the null hypothesis. However for an alternative hypothesis the researcher will try to approve it. So that's the basic difference. As a null hypothesis in a simple way, we could say individual is free from disease however under alternative hypothesis we would say the individual has disease. What we are trying to explain under null hypothesis is the fact that the relationship that is occurring is just because of the chance.

If we say the boy runs the temperature, it's merely by chance and there is no statistical significance. However under alternative hypothesis we are trying to explain that relationship is not due to chance. We say that individual has disease and we are trying to approve what we have. So what the researcher is trying to say in the statement that he is trying to approve that. If the father says there is a relationship between eating ice cream and running a temperature. He would try to approve that and finally it's a very simple logic that when you are accepting an alternative hypothesis the null hypothesis would be rejected and vice-versa.

Now let us understand this concept with the help of a normal distribution curve. What is a normal distribution curve? In the normal distribution curve, as we can see in the chart 3.8 below that at each point probability would be
explained by this curve and this curve moves in a fashion that we call it as a normal probability curve.

Now let's say in the same example of eating ice cream and running a temperature the father of the child believes that eating ice cream leads to temperature. He has a mindset that ice cream leads to temperature. Now this temperature could be caused due to numerous other parameters so;

- There could be Seasonal variation
- There could be mosquito bite or
- n number of other reasons

because of which the child could run a temperature. All these extra variables would be called as the confounding variables. These are the confounding variables that are affecting it. However for now the father is adamant that eating ice cream would lead to temperatures. So what does he do he tries to take a graph and plot the temperature of the person during the normal days where when he was not having a fever.

**Chart 3.5 Normal Probability Curve**

![Normal Probability Curve](chart.png)
Let's say 98.6 was the normal temperature that boy has and there is slight variation, say 97.2 to 99 or something in his temperature during his normal days when he was not running a temperature. This is how we can distribute the temperature of the boy and most of the days his temperature would be very close to the mean average that's the 98.6 degrees Celsius. However when the child is running a fever let's say a closer to 100 degree Celsius we need to accept this or reject this or this is caused due to error or not. It is about hypothesis testing and the various types of error involved in the hypothesis. Now with the help of the chart 3.8, we will try to understand a normal null hypothesis that can be very well explained on a normal probability distribution and most of the distribution line towards the mean. This mean is for the population. This we call a population mean. What we are trying to do here is the sample mean and this sample mean could deviate from the mean. That deviation is due to error or we will find when we will be working more on the hypothesis testing. This is the basic idea now.

We will be moving forward with other types of commonly used hypotheses. Let's say the first commonly used hypothesis is

- Substantiative hypothesis
  - Such as general hypothesis is not operationalised and
  - Then we didn't explain there is a kind of expected relationship between the variables that exist.
  - So if we want to lay down my hypothesis with the same example we can say under substantiative hypothesis, there is some kind of relationship between eating ice cream and catching a fever.

So there is some kind of relationship and that is explained and unsubstantiated hypothesis.

However under

- Statistical hypothesis we would say,
  - There exists a statistically significant correlation between eating ice cream and running a temperature.
- So there is some statistically significant relation and that is explained by the statistical hypothesis.
- That is operationalized by means of the statistical parameters this could be done by using t-test, F test and so on.

Now the next is simple hypothesis versus complex hypothesis. When we say
- Simple hypothesis
  - There is one independent variable and
  - One dependent variable

So, the one independent and one dependent variable would have again the same statement that eating ice cream leads to running a temperature so that's a kind of simple hypothesis.

However under complex hypothesis we have;
- Two or more independent variables and
- Two or more dependent variables

So, what could be our hypothesis? Our hypothesis could be eating ice creams in cold weather leads to running temperature and absenteeism in school. My two independent variables here would be;
  1. Eating ice cream and
  2. Cold weather

and my two variables would be;
  1. Running a temperature and
  2. Being absent in school

So, this is a kind of complex hypothesis where you have more than one independent variable and more than one dependent variable that worked together. The next is
- Practical vs.
- Statistical hypothesis.
  - Statistical we already talked about so again we can say under Statistical, there exists a statistically significant relationship between eating ice creams and running a temperature
  - However under practical hypothesis we would say that eating ice creams leads to absenteeism in the school.
*That would be a kind of practical outcome because of the eating ice cream the child's health isn't well and he is not able to go to school.*

*So, the ultimate practical outcome would be absenteeism in the school.*

*That would be a kind of hypothesis which is practical hypothesis that eating ice cream leads to absenteeism in school.*

The next kind of hypothesis would be the **Positive, Negative & NULL Hypothesis**

- **Positive & Negative**
  - The positive hypothesis would explain that eating ice cream leads to fever so that would be a kind of positive hypothesis, that eating ice cream leads to fever and negative hypothesis would be eating ice cream does not lead to good health. It would be a kind of negative implication so eating ice cream does not lead to good health. So it is not as important here so that would be a kind of negative hypothesis. and

- **Null hypothesis.**
  - Null hypothesis is again what the child tries to emphasize on his father that there exists no relationship between eating ice cream and running a temperature, would be the null hypothesis.
  - There is no relationship between the independent variable and dependent variable.

Finally the last two types of hypotheses are the universal hypothesis and existential hypothesis

- **A universal hypothesis we try to explain that;**
  - All variables are true at a given point of time so let's say for the same example we can say eating ice creams in winters and when turn leads to temperature
  - So that could be a kind of universally accepted statement.
  - That is true at all times because eating ice cream might lead to temperature in cold weather.
  - That is a universal statement.
However under existential statement we try to explain that there should exist at least one particular case. If it exists for one particular case that hypothesis comes to be true. Let's say eating ice cream leads to temperature for the child X or for some children would be a kind of existential hypothesis because even if one child catches fever because of eating ice cream that would lead to existential hypotheses.

The other examples for universal hypothesis can be that all brave soldiers if they are rewarded would perform well. That is a kind of universal hypothesis which is true always. However under existential hypothesis we can say if you are rewarding say all the employees of the company there could be one employee who might not perform well despite of the reward. There are few staff that might not perform well despite of the reward would be an example of existential hypotheses.

So, this is a very important concept to understand the difference between the universal and the existential hypothesis. So, once again;

- The universal hypothesis is one which is true at all the times so all the variables are at a given point of time are true would be the universal hypothesis.
- While existential hypothesis explains that it exists at least for one particular case

3.5 **Research Design**

As we now start to talk about the seven research designs. These 7 research designs are as follows:

1. Experimental design
2. Survey design
3. Comparative design
4. Case study design
5. Observational design
6. Action research design and
7. Mixed method design

- **Experimental Design**

  Experimental studies are performed to examine cause-and-effect relationships. The idea behind this research design is to have a control
condition versus an experimental condition or a few experimental conditions. So that the difference is amount of various conditions that can be identified which will enable the researchers to infer cause. For instance, if we want to know, if a teacher's attitude has any effect on student performance we will need to set up at least two conditions. A control condition; in which a teacher teaches with a cool calm collected attitude and an experimental condition in which the same teacher teaches with much enthusiasm and passion. Then after a semester or so we measure the potential differences in student performance between the two conditions. In order to infer whether causality exists as such experimental studies are generally performed in the name of causal or predictive or explanatory research.

- **Survey design**
  The second research design from this topic is survey design. The key idea behind this research design is to use a standardized instrument to collect standardized data from a large number of respondents. Researchers can use telephone based surveys or internet-based surveys or questionnaires basis surveys. But regardless of what medium or Channel the researcher uses the idea here is to collect rather standardized data from a large group of people. Survey studies are usually performed for descriptive purposes in other words. We would typically survey people in order to describe something. Now the implication of this process can be exploratory or even causal but the process itself is usually descriptive by nature.

- **Comparative design**
  The third research design is comparative design. This is straightforward. The idea is to compare one thing to something else. Researchers may want to compare the academic performance between Punjabi and Tamil students in a college or perhaps the difference in terms of student satisfaction between Chinese and Indian students in the faculty. Rather than calls this kind of research comparative research. This research design is generally descriptive.
• **Case study design**
  The fourth research design is case study. A case study is usually exploratory and it is called a case study because the study is performed on a particular case. By case we typically mean an organization and because case study is performed on just one organization, the findings and conclusions of the study may not generalize to other organizations industries or geographical locations. However, as case studies, are, most of the time exploratory in nature. Generalizability is usually not a main consideration. Anyway so it's all good research design.

• **Observation Design**
  Number five is observation design. This basically means that the researcher will collect data by looking at things. Observation can be covert or overt quantitative or qualitative. Performed merely as an observer or as a participant depending on what you think is best and what your research calls for. The researcher can choose all these different formats of observation. The observational research design can be used for all three research types.
  
  o Exploratory,
  o Descriptive and
  o Explanatory research design.

• **Action research design**
  Number six is action research. This research design involves the researcher taking certain actions within an organization. For example, a researcher implements a certain promotional campaign and the measures the effects of it in terms of revenues generated. This is a bit of a tricky research design, because, the researcher would generally want to present the study as both descriptive and causal. Obviously, if we want to implement something in an organization and then write it up as a research study, we would naturally want to describe how the implementation went. But usually we would also want to make this causal claim saying because of this implementation there was this outcome. But as discussed earlier causality is, in fact, quite difficult to
establish. So an action research design is also sometimes referred to as a life experiment. Acknowledging that it is not a strict experimental design but something like that.

- **Mixed method design**
  Finally, the last research design, from this topic is mixed-method design. By definition it means the study in which different data collection methods are used or different research designs are combined. This is also a research design that needs to be approached cautiously, especially, for bachelor students because think about it. Why would we want to combine different data collection instruments. Collecting different types of data probably from different populations and samples in just one study or even more complicated. Why would we want to combine multiple research designs in just one study if we truly have a need to do so why don't we just design and perform a series of studies with each one having a clear scope and using a clear methodology. So just like the action research design this mixed-method design is also a bit of a tricky one.
  So if you think you want to use this research design for your bachelor's dissertation I think you should talk to your advisor to make sure that this research design is truly needed so there you go these are the three research types and the seven research designs.

There are four main data collection instruments:

- The first one is surveying researchers can use different kinds of surveys telephone based surveys internet-based surveys or questionnaires based surveys. However, irrespective of which channel or medium is being used for the research to use a rather standardized instrument to collect rather standardized data from a relatively large number of respondents, in a relatively short period of time. So, when we build a survey we need to consider the kind of questions or items that should be put into it. Generally speaking, surveys contain mostly closed questions.
  - Yes-or-no questions,
  - Multiple choice items or
There are two main reasons for using these types of questions and items in a survey:

- First, surveys are used to collect mostly quantitative data because surveying is primarily used for descriptive purposes. As a result, women describe something we generally have the intention of being accurate and precise and as such quantitative measurable data is a good choice.

- Second, from a practical point of view probably no one would bother to write lengthy answers in a survey for you. If somebody hands us a survey and it contains open questions to which we must write long big essay type of answers. We will ignore that person. We are simply not going to bother to fit it out. So, as a result of both theoretical and operational considerations, surveys typically use closed questions that respondents can answer relatively easily and quickly.

There are a few important considerations:

1) When making survey questions or first offering gradations is usually better than just yes or no. Instead of asking, do you like this or do you agree with this statement or not we can better ask to what extent do you like something or to what degree do you agree with a certain statement and then offer a Likert scale. Not only such answers will more accurately reflect the opinion and the perception of the respondent, they also offer more possibilities. In terms of data analytical methods another consideration for creating survey items is really just to use your common sense. For instance, if, the physiology of the survey items, are highly leading or reproductive then we can almost be certain that the respondents won't be able to provide us with highly reliable data. Also sometimes that come across surveys with multiple choice items but the multiple choices do not even include all the possibilities that may exist. For example, if they ask us, do you drink water or do you drink wine with dinner. Well what if we drink beer which is not even included as an option. So, really a lot of the
suggestions that this topic offers are just common sense. So use your common sense.

2) The second data collection instrument that this topic discusses is interviewing. Interviews can be;
   o Structured
   o Semi-structured or
   o Unstructured

We can include focus groups under interviewing.

In this topic if surveys are typically used to collect standardized quantitative data, interviewing is pretty much on the other end of spectrum. Interviews are typically used to collect a qualitative data. Consequently during interviews only or mostly open questions will be asked, instead of asking.
   o Do you like research we should be asking?
   o What do you think about research?
   o Can you talk about what research means to you?
   o What is your opinion regarding doing research as a bachelor student etc.

because qualitative data collection is typically associated with exploratory research. We're not interested in getting just a yes or no answer or likert scale answer. We want to trigger qualitative answers. Previously, unknown perspectives. We want to let new issues surface through interviewing. That is why we want to ask open questions and we want to ask follow-up questions. We ask clarifications. We ask the respondents to tell us more to explain and elaborate further. That is the goal of interviewing.

3) The third data collection instrument that this topic talks about is up researchers can conduct observation in different manners. Covert or overt qualitative or quantitative as a mere observer or as a participant in a control lab setting or in the field as the researchers. Typically conduct the observation themselves. They can easily determine how best the observation should be done in line with the specific objectives of a particular research study. As such observation is quite a versatile
data collection instrument. Which can be used in all research types exploratory descriptive and causal.

4) The final data collection instrument that this topic discusses is projective techniques. So, the idea here is to show or project some kind of stimulus. Either vague or rather explicit to the respondent and you ask the respondent to respond to that stimulus. For instance, if we are shown an image of some sort and asked to associate it with a hospitality; related experience and then ask us to describe that experience. This would be considered a projective technique. We prevent this instrument as typically used for collecting qualitative data. There are five main types of usage of this instrument.

   a. Associate show a stimulus and after respondent - associated with something.
   b. Completion, show the respondents and stimulus that is incomplete and ask them to complete.
   c. Construction. Ask the respondent to construct something on the basis of the stimulus shown.
   d. Expressive, as the respondents to express their feelings and emotions on the basis of the stimulus is shown and
   e. Choice ordering. Ask the respondents to order the shown stimulus on the basis of importance or preference or some other type of criterion.

There are many recommendations for us to consider regarding how we want to best choose a data collection instrument. But we are just going to mention one most important thing here and that is choose, just one instrument. In our opinion each research study should have a clear scope. One study should be about one thing. A study shouldn't be about everything and anything, where the researcher has to collect all sorts of data using all kinds of instruments. Because if a study were like that we could pretty much guarantee that their findings and conclusions will be all vague and unclear, because a study like that will typically lack focus and scope. So if your study is like that that you really should think about narrowing things down.
Population sample and sampling- Simply put a research population refers to all the people about whom we want to draw our conclusions. A sample is the group of people from within that population from whom we actually collect data and sampling refers to the process through which we draw the sample out of the population. For instance, if my main research question is what do hotel management school students in Firozpur think about PBL then obviously the research population would be all the hotel management school students in Firozpur which would be about 2,000 people for our study. We will only collect data from 200 students. Then these 200 students will be our sample and the process or procedure through which we choose the 200 students out of the 2,000 is known as sampling.

There are two main categories of sampling procedures;

- Probability sampling and
- Non-probability sampling and

for each we have three examples with probability sampling. We as the researchers guarantee that every single subject from the population will stand the same chance or the same probability of being chosen as the sample, hence the term probability sampling.

In non-probability sampling procedures obviously we don’t bother with guaranteeing equal probability. By this definition probability sampling is always more complex and perhaps difficult to perform because we as the researchers have the duty of guaranteeing equal probability.

There are four probability sampling procedures and we’re going to run through the three most commonly used ones.

- The first one is **Simple random sampling** procedure meaning we establish a simple procedure to guarantee equal probability. For example if I have a population of 100 and we need a sample of 20, we can put the 100 names into a jar shake them up and pick out 20 names with my eyes closed. Through this simple procedure we can reasonably guarantee that personal bias does not exist at all and that the 20 names that are picked out are picked out purely by chance.
o The second is **Systematic random** this procedure says that we take the population size and divided by the desired sample size. As such we calculate the Skip interval. We pick a random starting point from within the population. Skip the amount of subjects, identified through the Skip interval and pick the next subject mathematically. After we have run through the entire population we would have selected the sample size that we desire.

o The third probability sampling procedure is **Stratified random**. This is to ensure that whatever subgroups that exist in the population will be retained in the sample. For example if we know the gender distribution in the population is 80:20 male:female and we want this to be retained in the sample. We would need to create two strata or two subgroups one of males and one of females. So, essentially we break the population down into two sub populations and sample them proportionately. So that the gender distribution that exists in the population will also exist in the selected sample.

This topic also presents a few non-probability sampling procedures

o The first is **Convenient sample**. This basically means that the researcher takes a sample based on considerations of what is easy and convenient. If we need 10 people as a sample and we happen to have 10 people in a class we can just take these 10 people that is a convenient sample. Now is this sample truly representative of the entire population. Well we don't care, but is that ok. Sure it is ok in some situations. If your population is very homogenous or if representativeness is simply not a major concern for you like in certain exploratory studies. Then a convenient sample is perfectly acceptable.

o The second one is called **Judgmental sampling**. This means the researcher will set up a list of criteria and then judge who he or she wants to include as part of the sample for a specific study. For example, if our study calls for collecting data from individuals who must fulfill a certain combination of
characteristics or experiences then judgmental sampling might be very useful.

- The third one is called **Snowball sampling** or snowballing. Essentially this means if I can locate one per who would qualify to be included as part of the sample, we will ask him or her to introduce us to more people like him or her who might also be able to fulfil the criteria. That we have set forth for selecting the sample. So there you go in this topic we have discussed three research types, 7 research designs for data collection instruments and 6 sampling procedures.

**Design adopted for the study**

**Data Collection**

For Collecting Data, we have worked in 2 Tehsils each in 2 Districts of Rajasthan.

District selected for the study are as follows:

1. Jaipur- Rural of State Capital
2. Bharatpur- Extreme Rural of a majority Rural district.

For selection criteria of Tehsil we have taken:

- 1 Tehsil; which has >50KM distance from District Head Quarter.
- 1 Tehsil; which has <50KM distance from District Head Quarter.

For Selection of Villages:

- We selected randomly 3 villages from each Tehsil.
- Since we have opted to do a study in rural areas. Criteria to select villages also needed to be robust.
- Therefore, have select these villages from where public transportation to Tehsil head quarter is not more than 2 times in the morning & 2 times in the evening.

Have used a mix of approaches to collect data wherein;

- Have collected Primary data by Participatory Method- Sample of 216
  - Criteria decided to collect data by personal interviews, was to interview minimum 0.5% of Population.
- Since the population 20529 we interviewed 216 persons in these villages which is slightly more than 1% of the population.
• Focus Group Discussion (FGD); which is “Choupal Charcha”, in villages of Rajasthan.
  o We decided to touch base with 0.5% of the population through focus group discussions.
  o We had 12 FGDs in these villages.
  o The size of the Focus group was 8-10
  o We could touch 112 persons in these FGDs.

Table- 3.1 Distance from District Head Quarters (DHQ) to Tehsil Head Quarters (THQ)

<table>
<thead>
<tr>
<th>District</th>
<th>Tehsil</th>
<th>Population</th>
<th>Distance from DHQ</th>
<th>Source of Distance Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaipur</td>
<td>Phulera</td>
<td>3673</td>
<td>63.2</td>
<td>Google</td>
</tr>
<tr>
<td>Jaipur</td>
<td>Chomu</td>
<td>9537</td>
<td>32.6</td>
<td>Google</td>
</tr>
<tr>
<td>Jaipur</td>
<td></td>
<td>13210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Kaman</td>
<td>4277</td>
<td>57.9</td>
<td>Google</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Deeg</td>
<td>3042</td>
<td>34.9</td>
<td>Google</td>
</tr>
<tr>
<td>Bharatpur</td>
<td></td>
<td>7319</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20529</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Source: Census 2011 for Population and Google maps for distance between DHQ & THQ
• We collected Primary data by personal interview of Rural Telecom users & non-users.- Sample Size of 216 (~1% of Population We collected Primary data by observation at Point of Sale for Telecom Brands & their respective Brand extensions.)
• We collected secondary data from TRAI (Telecom regulatory authority of India) & COAI (Cellular operators association of India) to evaluate Customer
Market Share and Revenue Market Share of last 4 quarters of various Telecom operator Brands in Rajasthan.

**Table-3.2 Census data of these villages**

<table>
<thead>
<tr>
<th>District</th>
<th>Tehsil</th>
<th>Village</th>
<th>Population</th>
<th>Household</th>
<th>Literate</th>
<th>Literacy Rate</th>
<th>Workforce</th>
<th>Sample required for FGD</th>
<th>Sample required for Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaipur</td>
<td>Phulera</td>
<td>Thakursi Ka Bas</td>
<td>847</td>
<td>123</td>
<td>570</td>
<td>67%</td>
<td>389</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Jaipur</td>
<td>Phulera</td>
<td>Dev Ka Bas</td>
<td>1288</td>
<td>195</td>
<td>830</td>
<td>64%</td>
<td>310</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Jaipur</td>
<td>Phulera</td>
<td>Kheriram</td>
<td>1538</td>
<td>234</td>
<td>953</td>
<td>62%</td>
<td>768</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Jaipur</td>
<td>Chomu</td>
<td>Lohanwara</td>
<td>3730</td>
<td>606</td>
<td>2340</td>
<td>63%</td>
<td>1326</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Jaipur</td>
<td>Chomu</td>
<td>Jaisinghpura Nathawatan</td>
<td>1537</td>
<td>234</td>
<td>899</td>
<td>58%</td>
<td>707</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Jaipur</td>
<td>Chomu</td>
<td>Alesar</td>
<td>4270</td>
<td>656</td>
<td>2571</td>
<td>60%</td>
<td>1837</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Kaman</td>
<td>Akata</td>
<td>3646</td>
<td>594</td>
<td>1382</td>
<td>38%</td>
<td>1422</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Kaman</td>
<td>Akbarpur</td>
<td>331</td>
<td>51</td>
<td>170</td>
<td>51%</td>
<td>156</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Kaman</td>
<td>Asooka</td>
<td>300</td>
<td>53</td>
<td>158</td>
<td>53%</td>
<td>169</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Deeg</td>
<td>Barai</td>
<td>1808</td>
<td>281</td>
<td>822</td>
<td>45%</td>
<td>919</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Deeg</td>
<td>Bandha Chauth</td>
<td>1102</td>
<td>185</td>
<td>614</td>
<td>56%</td>
<td>351</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Bharatpur</td>
<td>Deeg</td>
<td>Dahar Khoh</td>
<td>132</td>
<td>14</td>
<td>49</td>
<td>37%</td>
<td>29</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>20529</strong></td>
<td><strong>3226</strong></td>
<td><strong>11358</strong></td>
<td><strong>55%</strong></td>
<td><strong>8383</strong></td>
<td><strong>109</strong></td>
<td><strong>109</strong></td>
</tr>
</tbody>
</table>

Source: Census 2011

**3.6 INSTRUMENTATION**

For the purpose of studying the objectives and testing the hypothesis 3 questionnaire were made & used as an instrument to collect the data.

- Personal Interview Questionnaire
- FGD Questionnaire
- Retail Survey Questionnaire
Picture 3.1- Data Collection- Personal Interview at Village Akata, Kaman, Bharatpur, Rajasthan

Picture 3.2 Data Collection- With respondents at Akata, Kaman, Bharatpur, Rajasthan
3.7 **Validity Test**
The questionnaire was subjected to content validity. Prior to the evaluation of the validity of the instrument, the items that constitute adequate coverage of the dimensions under study were decided and developed by the researcher. Based on the validity test Questionnaire was redesigned, reworded or repositioned before putting into use to collect data.

3.8 **Pilot Study**
After finalizing the number of items in the research instrument and content validity tests, a pilot study was undertaken at Village Akata, Tehsil Kaman in District Bharatpur, for the following reasons:
1. To assess the reliability of the research instrument constructed.
2. To ascertain the time taken to complete the questions by the respondents
3. To ascertain the sample size for the study, as per the dimensioning criteria pre-decided before starting the study.

3.9 **Data Analysis**
The important phase of our study is analyzing this data collected. It is imperative to apply right statistical tools to derive accurate conclusions.

Descriptive Method
Factor Analysis-  *ANOVA Testing*

3.10 **LIMITATIONS**
1. Rural areas of Rajasthan.
2. Rural areas of Jaipur & Bharatpur.
3. Telecom Brands; Airtel Vodafone, Idea & others.
4. Since this research was conducted in 2 districts of Rajasthan that too in an extreme rural areas and a small sample, doesn't represent the total population, therefore; it can't be generalized to the entire nation.
5. Biased responses of participants, because of lack of knowledge about other telecom brands.
6. We assume that the participants would have shared authentic feedback & information in the interview, group discussion, basis which the findings are concluded.
7. Data collection error may be there, due to lack of understanding of interviewer about the dialect participants might have used during the recording of responses.

8. Issues of lack of time and positive attitude of the participants may lead to capturing of incorrect information from them, in some cases.

9. Hiding of facts by respondents, either deliberately or unknowingly.

3.11 TOOLS USED FOR THE STUDY
We used the following tools for the analysis of our data for the study.

- Multiple Regression Analysis
- Analysis of Variance
- Average Score Analysis
- Correlation Analysis
- Factor Analysis
- T-Test
- Chi-Square Analysis

All these statistical evaluations were tested with Significance level of 5%.

The views and feedbacks of the participants with respect to brand extension and their preference for various brands were evaluated with the help of a 5-point scale or Likert scale.

- Regression is a functional relationship between the variables. If there are 2 variables in the study of regression then it is called single regression otherwise the study is multiple regression (Kothari 2004).

We performed multiple regression analysis majorly to check and evaluate different factors influencing customer preferences towards extended brands.

It was also used to evaluate the relationship between the chosen factors to examine consumer preference on brand extension.

- In this study, the independent variables considered are
  - Cognitive mechanism,
  - Popularity of the parent mobile brand,
  - Recognition of parent brands and their extension,
    - Their unaided Top of mind awareness
    - Customer’s Intention to purchase.
  - Difficulty of the extension,
- Familiarity of the parent brand,
- Network
- Tariffs
- Customer service
- Fair Deductions
- Brand Image
- Special offers for rural areas
- Availability of products - distribution

- The dependent variable;
  - Consumer preference for various brand extensions of different mobile parent brands &
  - Rural Marketing strategy

- SPSS was applied to analyse and test statistical data.

The correlation is a study on finding the relationship between the variables. If there are only two variables then the study is called simple correlation otherwise, the study is partial or multiple correlation (Uma Sekaran 2006).

We used, the simple inter correlation method to analyse relationship between the chosen variables with the help of Karl Pearson’s coefficient of correlation. The same was also used for testing various factors on significant level of 5% with the help of t-test. The interpretations are shown in various tables and charts.

3.12 CHAPTERISATION

This section provides a brief description of each chapter.

Chapter One is about Introduction of the topic:

- This chapter gives us a theoretical background for the study.
- It includes definition and terminology of the items related to;
  - Brands,
  - Branding
  - Brand philosophy and
  - Brand extensions
- Introduction & relevance of various topics with the study.
• It also looks into various requirements of Brands & Brand extensions and their merits for both the organization and the customer who experiences that brand.

• Rural Potential - Opportunity for Marketers

• A gist of Marketing specially focussed on Rural Marketing
  o Communication
  o Media
  o Need to rural communication
  o Rural specific products

• Rural economy

• In this chapter also details about different kinds of brand extensions.
  o Merits & demerits of brand extensions
  o It discusses the influence of different factors on brands & brand extensions.
  o It clarifies the requirements for and the relevance of;
    ▪ Doing the study and
    ▪ The goals to be met.

Chapter Two is about Review of Literature;

• This chapter explores and reviews earlier studies performed & done on the topic of brand extensions.

• It also covers the gaps in earlier research or studies done previously on;
  o Brand,
  o Branding,
  o Brand Extensions
  o Rural Marketing etc.

Chapter Three is all about research methodology;

• This chapter provides details of the research methods used to
  o Meet the goals &
  o Objectives of the study.

• It also show cases the methodology used to
  o Collect data
    ▪ Personal Interviews
• Focussed Group Discussions
• Retail Survey
• Secondary Data from:
  • Telecom Authority of India’s data
    o Subscriber’s reported figures
      ▪ Operator wise
    o Revenue reported numbers
      ▪ Operator wise
    o To validate the hypothesis
      ▪ \( H_0 \) Brand score of these Brand extensions is equal or higher than the Customer Market Share of respective Parent Telecom Brands
  • Census of India’s Data
    o To validate demographic and
    o Socio-economic profile of the rural population of Rajasthan
    o With the data collected for our study.
  • Road Transport corporations data for;
    o Transport service to select villages for the survey.
    o About the instruments used to collect primary data
      ▪ Questionnaire
    o Validity & reliability tests done for the instruments used to collect data
    o Sampling technique used,
      ▪ Sample size
      ▪ Random Sampling
    o Detailed definition and understanding of Research Methodology
      ▪ Especially topics like;
        • Hypothesis
        • Types of Hypothesis
        • Correlation etc.
o The management of the instrument created,
  ▪ It's explanation and
  ▪ Rationale to pick the specific samples.
o The statistical tools adopted to analyse the data collected and collated and
o Limitations and boundaries of the study;
  ▪ Are also described and mentioned here.

Chapter Four is all about;
• The data collation and it's analysis and
• Interpretation of the data.
• It consists of the data analysis with the help of tabulation, by application of appropriate and relevant statistical techniques.
• This chapter includes tabulation of the Demographic & socio-economic attributes of the sample and
• Tables depicting the techniques to validate the objectives of the study.

Chapter Five talks about
• Findings and
• Conclusion,
  which shows and talks about;
  • The key findings of the study, and
  • Conclusion of the study.

Chapter Six consists of the following;
• Scope for future studies
• Recommendations
• Limitations of the study
• This chapter justifies;
  o The managerial propositions of the study have and
  o It offers suggestive ideas, basis the conclusions of the findings of the study.
• This chapter also puts light on the;
  o Scope of future research,
    ▪ Which can be done by future research scholars,
    ▪ In this area of work.