Marketing Research and Analysis-II (Application Oriented)
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Lecture – 7
Hypothesis and Research Question – I
(with real life example)

Welcome everyone, welcome to the course Marketing Research and Analysis II.

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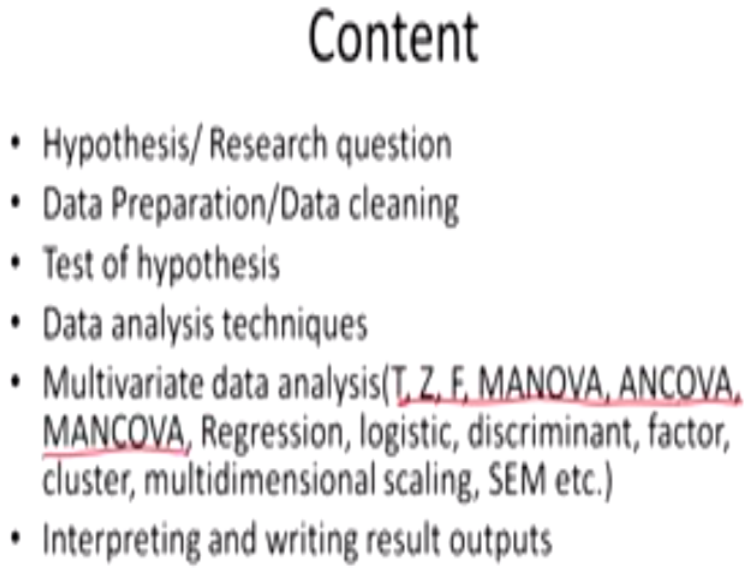

First we will start with hypothesis and research question. You can take it other way around, so research question and hypothesis whatever. So once although we have done it in the first part of the course, but here again, I want to start from here so that I will tell you how to develop the hypothesis and what factors what things you should be considering while developing hypothesis and testing the hypothesis. Then after that comes a very very important part.

Many a times, I have seen students and researchers they collect data but then they do not collect it in the right way and then during the analysis it becomes very very tough task to interpret them and even properly analyze them. So for that reason, what I though is one session I will be spending entirely on how to bring in the data, how the researcher should collect the data, and how they should be putting it in the software or coding them and editing them and all these things and finally the most important part which everybody misses is that how do I prepare my data, is my data in the right format to be analyzed or not.

You will see that many a times we take it as a headache and as a pain, to avoid that what we do is, we try to force fit and forcefully go across with the data that is available in our hand, that is not right that is dangerous. In fact what you do in by doing that because machine does not understand the human behavior, it will give you some result, but then the result may be it could be wrong because after all you are the person you are the researchers who will be interpreting them.

So if your data is correct and it has been cleaned, it has been put to size, then those datas are the best data and they should be then carried on for further analysis. So that is where I will spent some time help you out all researchers to how to clean the data and what should you keep in mind while collecting the data, then I will get into the test of hypothesis. So because every researcher at the end of the day either they needs an answer for a question or it wants to test an assumption or some kind of a belief or some kind of a statement that it has made so it wants to test it whether it is true or not in the market.

So we will be testing those hypothesis with several techniques available to us. Then we get into the most largest part of the study or this course is the data analysis techniques, here as a matter of concern, I will try to tell you all the different techniques when you should use and why you should use. With addition, I will tell you which technique, what should be the conditions you should be keeping in mind, how you should be avoiding a mistake, and you should be doing it in the right way.

So univariate data analysis, bivariate data analysis multivariate data analysis; finally they are all data analysis only right. So only condition is there is over variable two or more variables. So there are different tests which I will be explaining. I have just written in a bracket if you can see for example the T Z F, so these things MANOVA, ANCOVA, MANCOVA, regression, in regression again simple regression and multiple regression.

Suppose there is a dummy variable then what, dummy variable, dummy variable coded regression, logistic regression, again in logistic regression simple and multinomial logistic regression, then discriminant analysis, multiple discriminant analysis factor, exploratory factor analysis, cluster analysis, multidimensional scaling and SEM which is I have seen that I have conducted several workshops on data analysis and there has been always a demand from people and researchers.

They find that they are confused with things like structural equation modeling, confirmative factor analysis, so mediator moderator effects all and so these things I will try to clear it as much as possible within my limitations, my capability and I hope that will help you drastically. I will try to make it as clear as possible so that finally you interpret and write your result outputs very clearly.

So let me begin. So I think this is what my content is all about and I hope I make it as clear as possible for you. So let us move now to the next slide. So let us start with this.

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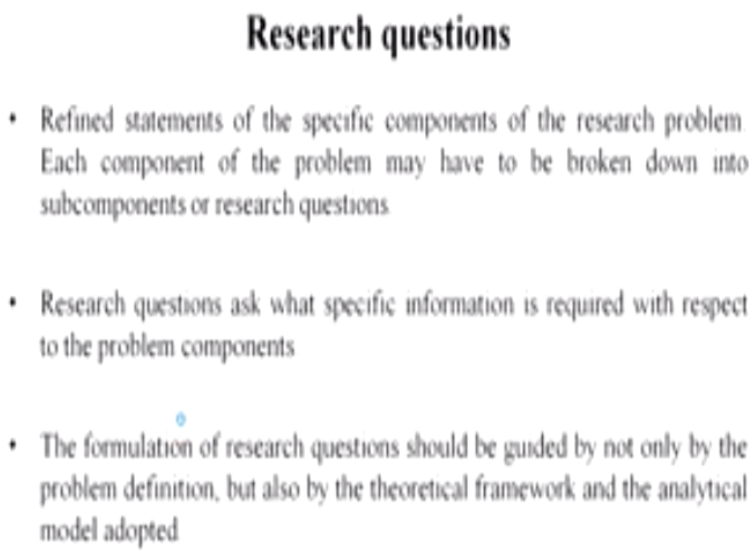

Research questions. So what is a research question. So before we go to the research question, I want to show you something.

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Look at this photo. This is a very popular photo, we all have seen and we know about it. This apple when it fell on Newton's head, Newton asked a question. Why did the apple fall right, why did not the apple fall somewhere else, why did fall directly on the ground right. So that was the birth of a research question and that was from there evolved the gravitational theory and many other theories connected with the gravitational one.

So the point is human mind is always concerned, is always thinking, is vibrant and is continuously thinking something why did it happen, why it be happen in this way only, why not some other way, will the marketer's strategy work, will it not work, will it work because of some other effects, is it directly whatever he is doing will the result will be an output of the variables, or whether have we missed some variables. There are several things that keeps always comes to our mind.

So let us go back. So what is the research question. It is a refined statements of the specific components of the research problem. As you can see, each component of the problem may have to be broken down into subcomponents or research questions that means if you look at this;

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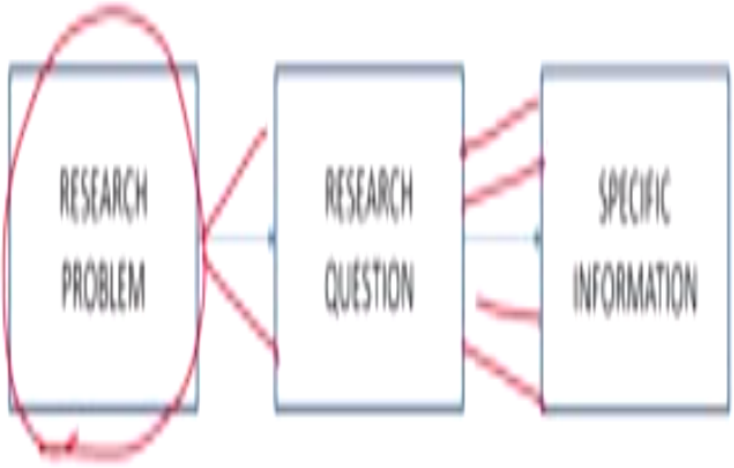

So this is a research problem. So this research problem once you have identified, then this may give to several research questions, may be 1-2 subcomponents, sub-research questions. For analyzing or understanding this research questions, you need information, specific information. So then, you start collecting information. So this is how it goes okay. So research question ask what specific information is required with respect to the problem components, many a times it happens. Why this is important to be discussed.

Researches get into a flow or they get diverted, they start vacillating from their major objective or main objective and they go into areas which are may be close to their research topics but it is not their final concern or that is not their major objective. So it is very natural to get deviated because of a flow of a thought process but you have to be careful in that, so you should not be deviating too far as in mathematics also we say there is a standard deviation, there has to be a range. If it is too much, then it is not good.

So slight deviation is okay and may be it is required also sometimes, but too much of a deviation is also bad and that is why you need to understand from your problem statement what are the research questions I need and what are the major research questions. I cannot go on adding more and more such question because there is a limitation and that is not fitting to my may be objective or study.

The formulation of research question should be guided not only by the problem definition but by the theoretical framework and then analytical model. Now what is that theoretical framework, let us say. Now you have studied several theoretical frameworks. For example we

say why do fans behave or why do fans run after or try to do something that is what their role models are doing.

For example if somebody is a big fan of let us say Tom Cruise, so you try to do something that Tom Cruise does or you are a follower of John Nash, then maybe you are a scientific person, scientific in mind, so then you would like to behave and try to do something like John Nash. So the question is try to get into his research works and try to do more into that. So the question is the theoretical framework that comes in here is called basking in reflected glory.

So we say that person is following certain kind of a framework, may be he is following certain kind of a theoretical model, so then it can be also added with some analytical models, be it be a verbal model, be it be a mathematical model or anything. So how does he actually think, this is nothing but you can understand in this way it is like a flow chart, it is a verbal representation, it is visual representation not verbal, it is a visual representation okay. So as I said research problem leads to research questions and research questions need specific information to get answered.

Let us come to the marketing research problem. So because this course is marketing research and analysis, so we need to be very clear that marketing research is completely much effected or related to the consumer behavior and the buyer behavior, the supplier behavior, basically human behavior to be very honest in the terms of a parlance of a market. We are not talking about psychology in terms of let us say some other conditions, but in terms of the market and economy at large.

So 2 things are there either it is a living organism or is a nonliving organism. If it is a nonliving organism, it is a machine. So a machine's behavior is different, so you do experiments in the lab, but here our object of study is humans and may be living organisms so suppose you are making a product for your pets dogs and something, then may be you have to understand what dogs eat and what do they like. Suppose you are making something for woman, then you have to understand what woman wants.

If you are doing something for men, let us say elderly men, then you have to say what do elderly men like or what do they want, what are the products that can be made for them, how do they behave, and what the point of time do they buy, why do they buy only at this point of

time and why not some other way. So all these questions are pertaining to the demographic or the scope the subject of reference. So let us take this example.

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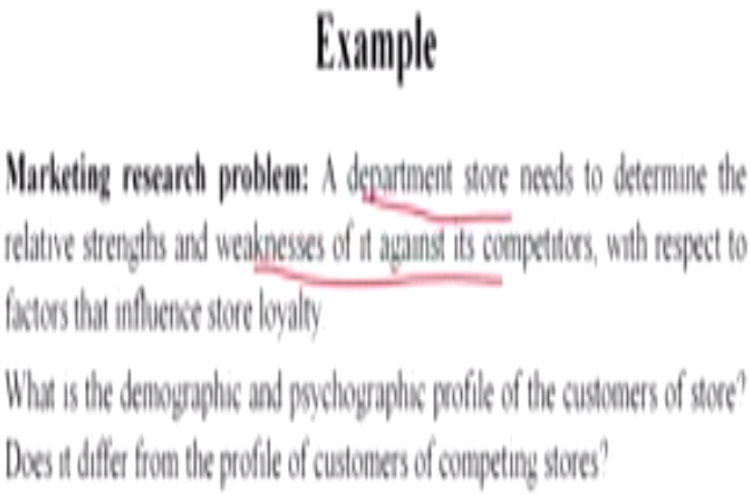

So a department store needs to determine the relative strength and weakness of it against its competitors with respect to factors that influence store loyalty, that means a store is interested in understanding that against its competitors, when it compares against its competitors, what are the relative strength and weaknesses that influence store patronage or store loyalty. So there the following question is what is the demographic and psychographic profile they are important.

So who are these people, and what is the psychological behavior the psychographic profile of the customers of the store, does it differ from the profile of customers of competing stores, the people who are coming to visit my store are they different from the people who are visiting the competitor's stores, is there a significant difference because the word significance I will be using repeatedly and mathematically it make the sense because otherwise things becomes a chance.

If it is not significant, then it is a chance or something that happens or chance is something is of no importance to you or me because then we cannot prove it, we cannot claim that it will happen again and again and there is no external validity connected to it. So the point here that comes is does it differ, is it statistically significant, is there is significant difference between the customers' profiles between the ones who are coming to us and the ones who are going to a competitor's okay.

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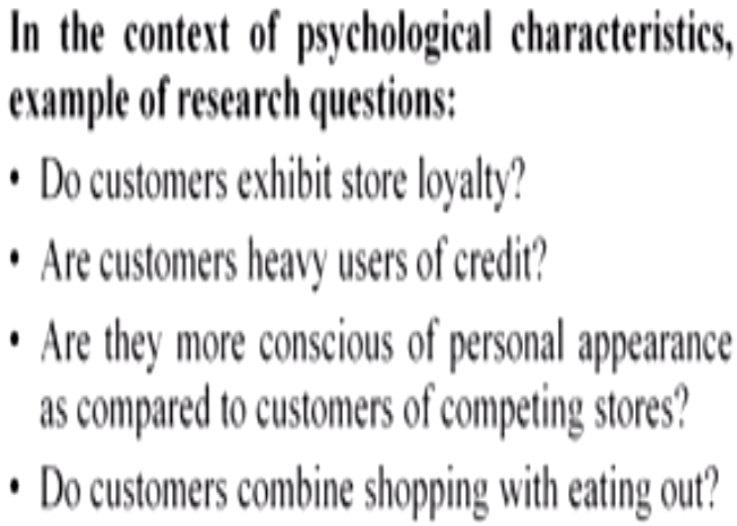

So in the context of psychological characteristics example of research questions, a few of them let us see. The first question says do customers exhibit store loyalty, that means given a chance, suppose some competitive store, my competitor, let us say brings in a new loyalty scheme or a promotional scheme, not loyalty promotional scheme, or decreases its price whatever, would the customer stay with me or would my loyal customer whom I am thinking to consider him to be loyal, they would move away?

Are customers heavy users of credit? Do they want to buy things only in credit? If yes and suppose I am a store who is not giving credit facility, then maybe I will get affected correct. Are they more conscious of personal appearance as compared to the customers of competing? Are the people who are coming to my store, let say I am XYZ store and those who are coming to my store are they more concerned about their appearance, how do they look and what is their physical appearance, let us see what kind of dresses are they putting on, so are they conscious.

We will need to see because these things are very critical, very important to differentiate your customers. Do customers combine shopping with eating out? So this is like something preparing a cluster. So we are trying to combine shopping with eating habits. Some would let us say, yes people who are shopping, they automatically come to shop because they at the end of the day they want to go to the nearest eating joint and have something, maybe, maybe they are coming to shopping just because they want to go to those eating joints and enjoy themselves, entertain themselves.

So we need to understand the psychological behavior until and unless we understand this behaviors of people. It is very difficult to formulate any strategy in terms of product, in terms of price, in terms of the availability, the place or even how to attract them, the promotion, even how to package, so the promotion, I will take it for the moment into the packaging to promotion only. So this is where it becomes very important.

So after you have understood research question, that means something that was not there, so you as I said in my first course if you want, you can look at my NPTEL's first course the Marketing Research and Analysis I where I had explained how research question is connected with an exploration, it is an exploratory part. It is a part of the exploratory research, you are exploring something. What is beyond the galaxy? I do not know, so I do not have an answer, but there is something called a hypothesis which comes when you have certain knowledge about the subject.

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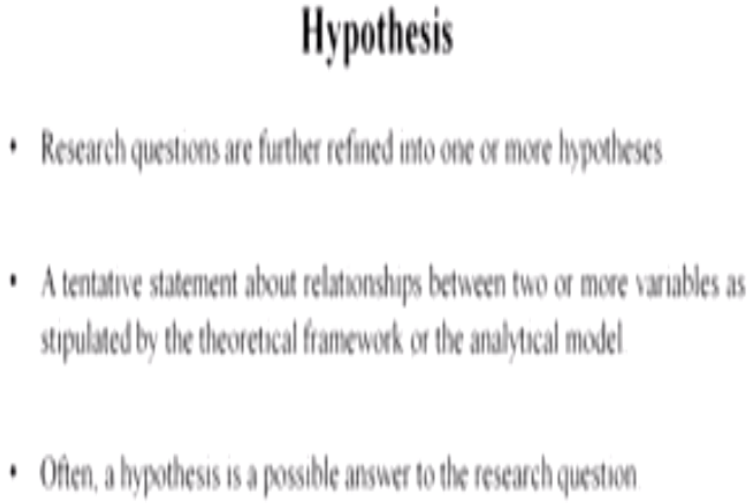

So research questions are further refined into one or more hypotheses. So hypothesis generates when the researcher has at least certain idea, some idea about the object of reference or the object, the subject of the study. So it is nothing but a tentative statement about relationships between two or more variables as stipulated by the theoretical framework or the analytical model.

So for example let us say if I release a particular product during a particular time period of the year, it will become a grand success, now so time and the type of product, now those 2 variables are correlated that I mean to say right. So my hypothesis is that the time of launching the product makes an impact on the rate of success of the product. So this is an hypothesis, it could be true, it might not be true okay. Often a hypothesis is a possible answer to the research question, yes obviously.

So when may be Newton developed the first time he asked such question, so after asking the research question, he must have done some study and then his scope of study increased and his research in that area increased and he started learning more about the subject, maybe he himself and his peers and all, and finally what happened was they could come to certain kind of statements that they developed may be it is happening because of this reason. So once the knowledge base improved, then they started getting into this developing of hypothesis okay.

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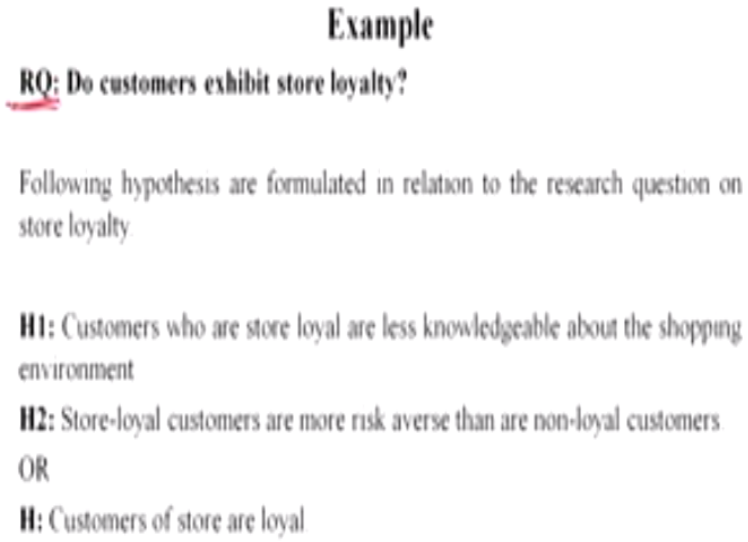

Example of a hypothesis. So the research question first. Let us this is the research question. Do customers exhibit store loyalty is the research question. Now what are the connecting hypotheses. The following hypotheses are H1, customers who are store loyal are less knowledgeable about the shopping environment. What is the first hypothesis, the customers who are store loyal are less knowledgeable about the shopping environment, that means loyal customers are not aware about or not concerned about the shopping environment, they are not bothered about it.

Second, store loyal customers are more risk averse than are nonloyal customers. The loyal customers are more risk averse, they would avoid risk, so maybe that is the reason they become loyal. They do not want to go to try out some other stores. So these are some of the hypothesis that the store, let us say a large store like for example Wal-Mart or anybody can develop connecting to the research question, do customers exhibit store loyalty or is it because of the hypothesis which says like they are risk averse or they have no knowledge or less knowledge. So these are the hypotheses that is connected.

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- Hypothesis are statements of relationships or propositions rather than merely questions to which answers are sought

Research question	Hypothesis
Interrogative in nature. Exploratory in nature	Conclusive or Declarative in nature and can be empirically tested
Refined statements of the specific components of the problem. Helps in developing hypothesis	Is an unproven statement or proposition about a factor or phenomenon that is of interest to the researcher.

So hypothesis are statements of relations or propositions rather than merely questions to which answers are sought as it is written. So how is it different let us see. Research question is it is interrogative in nature, exploratory as I said, it is trying to find out, there is an urge to learn and I do not know anything about the subject. Hypothesis on the other hand is conclusive or declarative in nature and can be empirically tested. So I have some basic knowledge and now I want to if not directly the same product or same service may be something similar or close to that.

So it can be empirically tested and it is a part of the conclusive research. Again, I tell this hypothesis is mostly into conclusive research side which contains 2 parts, the descriptive research and the causal research. The descriptive research is something where you are basically testing hypothesis in the condition of a market in economic conditions and the causal research is something where we just try to see cause and effect, action-reaction, so cause-effect.

So those 2 conditions are conclusive researches you are testing the hypothesis sand trying to prove it. Second when you come to research question, these are the refined statements of the specific components of the problems and helps in developing hypothesis. Research questions helps in the development of hypothesis, on the other hand, hypothesis is an unproven statement or proposition about a factor or phenomena that is of interest to the researcher. It is unproven, there is some knowledge, so the researcher develops hypothesis and tests it.

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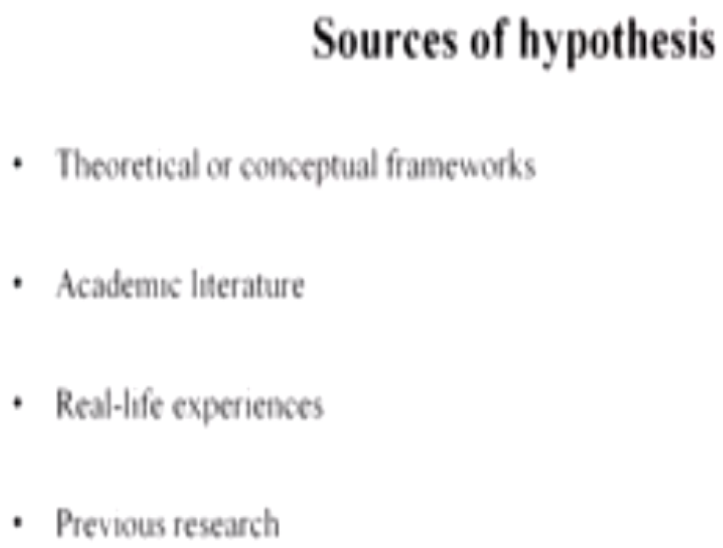

What are the sources of hypothesis? How do you develop hypothesis? As I said you need to have some knowledge. So there are theoretical or conceptual frameworks. So as I said there could be a theoretical framework or there is some kind of a connecting statement or some kind of a connection. So when can have such kind of a knowledge, let say A affects B and B effects C, so I say A also affects C indirectly.

Academic literature, obviously when you go through literature and surveys, we see that academic literature helps a lot also generating knowledge, and once you have the knowledge, you try to test this knowledge in form of a hypothesis. Third, real-life experiences. Maybe I have not studied anything, but when I went to the market, I found very interesting one behavior that people are interested in buying colorful let us say dolls or children let us say are interested in buying only colorful dolls.

So when I am saying children are interested in buying colorful dolls, so that is a real-life experience, which I have neither studied anywhere or I have no clue. So I saw may be I went to the store 10 different times differently, and each time, I went to buy for my child let us let

us say some doll and I saw that she is getting attracted to a colourful and chubby doll. One time I though it is only because not only colourful it is very cute looking doll.

Second time, I saw somebody, not only my child but some other children also there, they were again buying a colourful doll which was not so chubby may be. So third time and fourth time when I continuously observed, I found that more than the chubbiness or cute lookingness of the doll, it is the colour that has been significantly constant in all the time. Now I want to see through a research whether the kind of colour used for the dolls, are they the reasons for attracting the children, so that is what I am thinking.

Previous researches, so previous researches have been done in some area on a relating area. Now when I go through it, I would feel well if this has happened let us say in X country, let us say the study was done in some let us say X country, can I see and test because we are all humans may be it is Asia or Europe or America or Africa, it does not matter, they are all humans, yes there are differences in culture and tradition, but humans after all right.

So if it has happened possibly in let us say Africa, will it be the same can I say that it would also happen similarly in India. So that is a question, so I am asking, so looking at the previous researches done in Africa or Europe or America, I am trying to see will be repeated to the Asian counterpart. So this is some sources.

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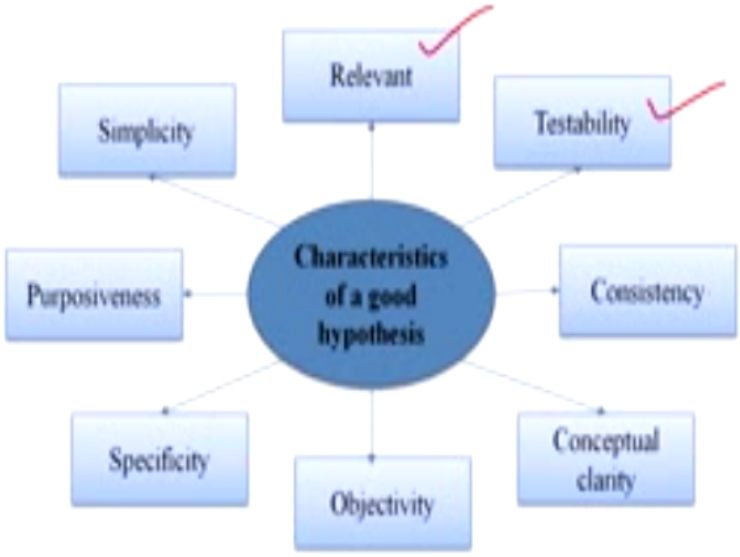

When you talk about a good hypothesis, so what is a good hypothesis? A good hypothesis has got certain features as you can see, so all these have to there. First it should be relevant, your

study should be relevant, that means as I said you are not going too much, you are not getting deviated out of your topic, you are not going too far out of your topic, kindly be very very very clear on this and be very careful because we have a tendency, because you see today now a days most of the researchers are applied and there is a time limit to research and you cannot just carry on forever right.

So the relevancy of the study is very important. If you take in such kind of hypothesis or research question which may not be very much directly related to you and you are spending time, then may be, may be, may be although knowledge never goes waste but it could be a waste of your time for that particular condition. Testability, can I test it, is it possible within my limited resources, can I test it or not. Consistency, a good hypothesis should give after testing a consistent result, so there needs to be consistency in my approach.

If I am developing a hypothesis and someone else is developing hypothesis for the same area, the hypothesis needs to be consistent in nature. Conceptual clarity, very very vital, when you develop a hypothesis, you only should develop one hypothesis or you can, but sometimes we do not keep hit to that you need to have a very strong theoretical foundation so there is a conceptual clarity. Objectivity, as I said you have to be focused what is the objective of your study.

Specific, again what specific information do I need to carry on this study, so all these things should be clear. Purposiveness and it should be simple .So these things, some of them you may club it also. If you feel let say they are too thinly distributed, you may club and make it into 2-3 groups, no issues, into that but these are the things that a good hypothesis should have, at least it should have a very strong conceptual foundation that means your theoretical framework you have knowledge about it and it should be relevant, it should be testable, and obviously you should avoid complex ones.

So these are some of the things that you should keep in mind. Well we talked about research questions and hypothesis and framework or framing. In the next session also, I will continue with hypothesis, may be 1 or 2 sessions, we will spent on hypothesis and then we will get into the data part. So I hope it was clear and thank you again for supporting me and look watching my course and taking this course as a part of your career. Thank you again and I wish you all the luck. Thank you so much.