Indian Institute of Technology Kanpur
National Programme on Technology Enhanced Learning (NPTEL)
Course Title
Marketing Management – 1

Lecture: W4-L5
Capturing Marketing Insights

by
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Dr. Shashi Shekhar Mishra: Hello and welcome to another session of course marketing management part 1, we are in week 4 and this is lecture 5. This is module 3 of the course and we are discussing about capturing market insights. So as you can recall from the previous session we have discussed about the last couple of session about measurement and scaling and in the last class in particular, last session in particular we were discussing about the sampling process.

Now once you have formulated, once you have designed your sampling process and you have collected the data, then you have to prepare the data and the data has to be prepared for the analysis. Now the data collection could be done through various modes these days, you can do offline data collection you can do online data collection, both type of fieldworks have their pros and cons like online data collection process is a quick cost effective.

However you will also find out that many a times in offline data collection process the response rate is better, because it could be because of the repo of the, reputation of the, credibility of the field person who is collecting the data. Then once you have collected the data you need to basically prepare the data, in that you have to remove that responses which are not appropriate in the sense, if the respondent has given his respond without understanding the questions or all his responses are of similar type across all questions.

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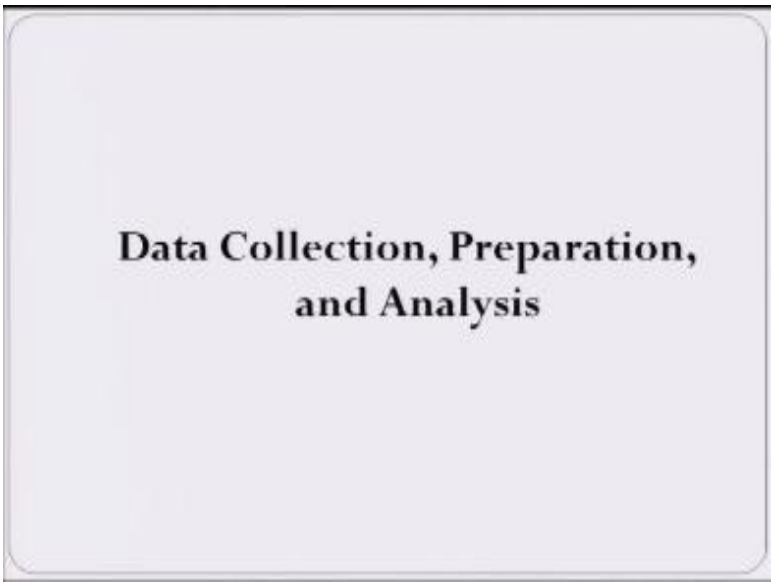

Dr. Shashi Shekhar Mishra: Or if there are missing values or if some important questions have been missed out by the respondent. And all those things you have to look into and you have to prepare the data for the data analysis, and in the data analysis part what is required is this data analysis is done to -- for the sake of hypothesis testing. Now as you can see the hypothesis testing basically the intent of hypothesis testing is formally examine the argument that researcher is proposing or researcher is arguing about.

So hypotheses are basically statement of researchers proposal is basically or the researchers argument is contained in the statement of hypothesis called as alternate hypothesis HA.

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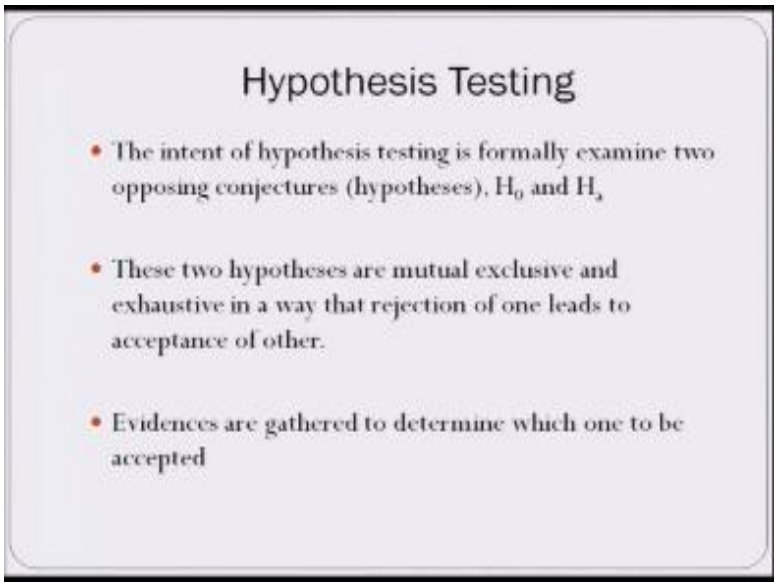

Dr. Shashi Shekhar Mishra: There is basically a mutually exclusive and exhaustive conjecture to that which is called as a null hypothesis H_0, most commonly denoted as H_0. Evidences are gather to determine which one is to be accepted.

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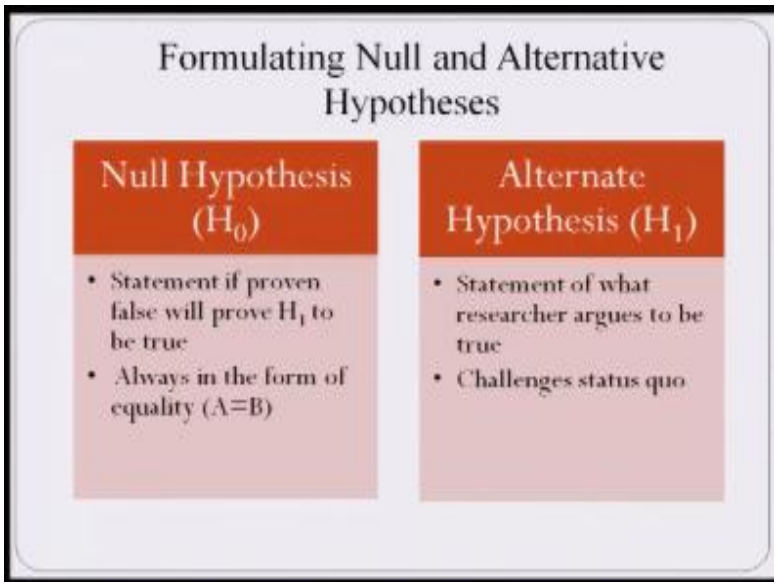

Dr. Shashi Shekhar Mishra: Now these two hypotheses, null hypotheses and alternate hypotheses they are designed in a way that if you can falsify H_0 that is null hypotheses, the researchers argument or the alternate hypotheses is being accepted.

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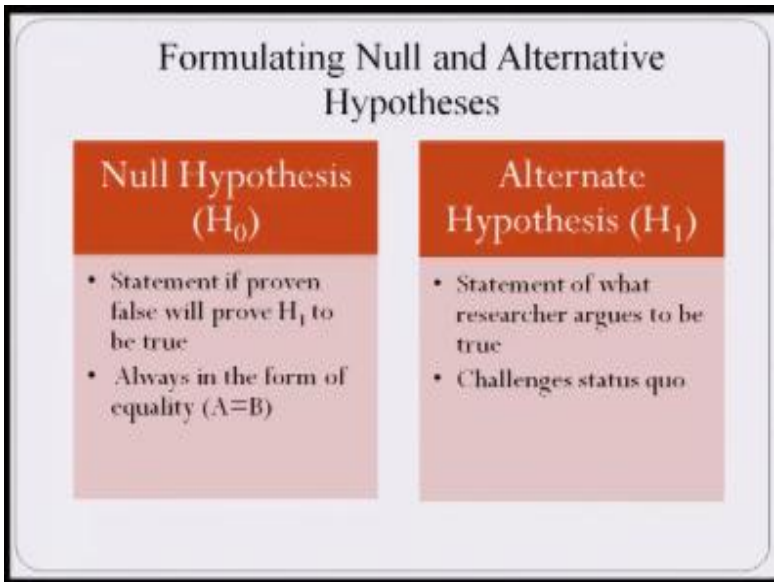

Dr. Shashi Shekhar Mishra: This is the methodology which is adopted across in hypotheses testing part and in the null hypotheses you will see that this statement if proven false will prove H_1 to be true. So essentially what you are doing in the null hypotheses is that you are testing a relationship which is generally in the form of equality if that equality is disproved automatically it gives you the information that either A greater than B or A is less than B, and that is basically the kind of the argument that such as might be making. As far as about alternate hypothesis this is a statement of it what researchers argues to be true and challenges the status quo. Now there are couple of two types of prominent mistakes that happen while we are testing the hypothesis.

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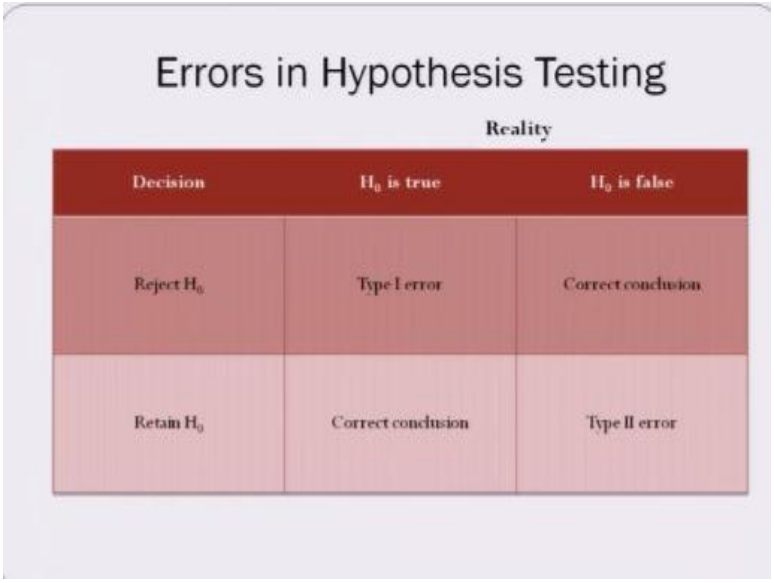

Dr. Shashi Shekhar Mishra: As you can see in this two by two matrix that reality could be of to type, either your H_0 is true or H_0 is false. Now what decision you take based on your hypothesis testing could be again of two type. Either you reject your null hypothesis or you retain your null hypothesis, based on that you get two by two matrix or four options corresponding to each of this X and Y axis.

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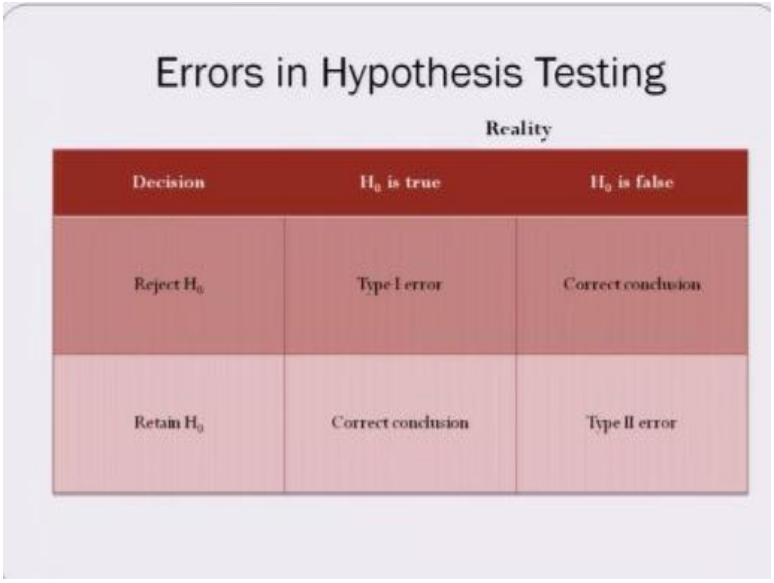

Dr. Shashi Shekhar Mishra: Now look at the first case where H_0 is true however you have rejected it so this is called as type 1 error, the percentage or the probability responding to this is called the confidence interval with which you can say that what you have tested is true, so the next thing is that if H_0 is false and you have rejected then that is the correct distance since H_0 was false actually and you have rejected.

So it is a correct decision now coming on to this, this part retaining of H_0 now when you retain H_0 when H_0 was true this is again a correct decision, however when you reject when you retain H_0 however when it was false this is called as type 2 error.

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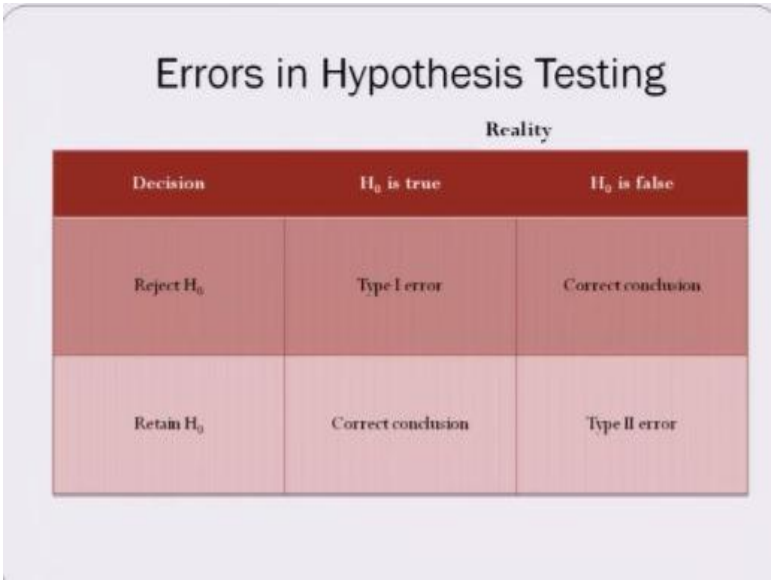

Dr. Shashi Shekhar Mishra: So there are two common, common or prominent mistakes in hypothesis testing part which is a type 1 and type 2 error. So I am not going into the much of the detail of all this statistics which is related with the hypothesis testing and the data analysis part but I will just try to give you an overview of all this hypothesis testing and data analysis so that you can in later on courses, or the more advanced courses of Marketing Research or the data analysis or the business research methodology you can understand in more depth on all these topics.

Now coming to this data analysis part you will see that data analysis could be of two type based on the type of the data you have got or the type of scale you have to measure the variables, that is parametric test and nonparametric tests.

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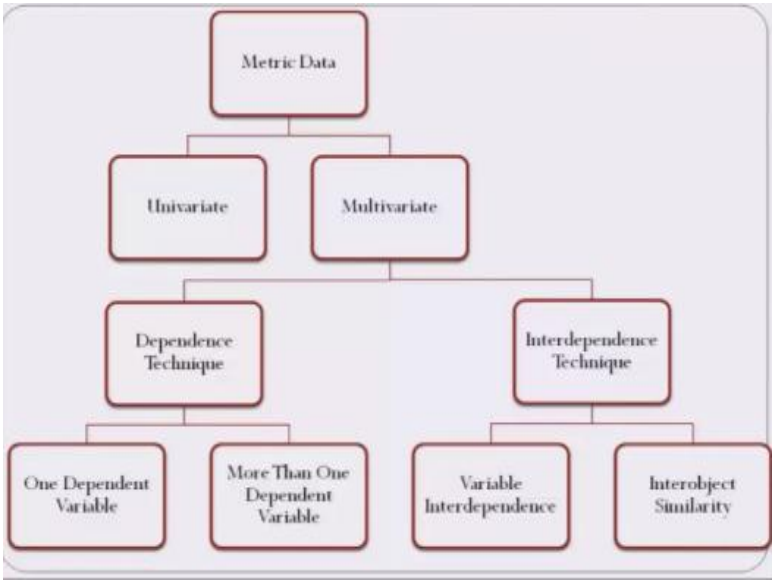

Dr. Shashi Shekhar Mishra: Parametric test is based on the matrix data that is at least your scale is of interval scale or matrix data is generally said to be in two form interval scale or the ratio scale. Now you can see this matrix data could be of two type, whether you have captured just one variable or you have captured multiple variable so it will be univariate data analysis or multivariate analysis. In the multivariate analysis multivariate data analysis is further classified depending on the relationship among the variables so whether they are, there is a dependent and independent variable than that the techniques or the method employed are called dependents techniques.

And when there are there is interdependence or the correlation among the measured variable then it is called interdependence, so there interdependent techniques comes into the picture. Coming to this dependent techniques they can be of two types, you have one dependent variable or more than one dependent variable.

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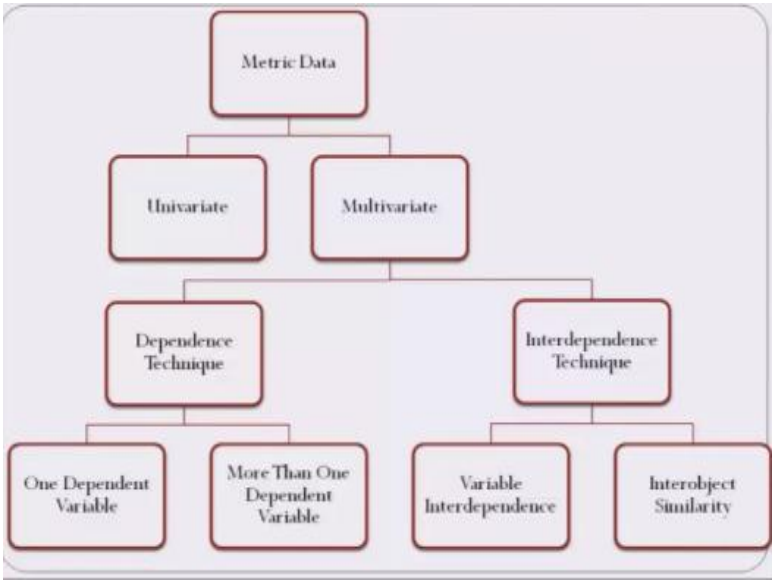

Dr. Shashi Shekhar Mishra: And in the interdependence technique you will see that whether the variables are themselves correlated or interdependent, the objects are basically have some kind of similarity among them.

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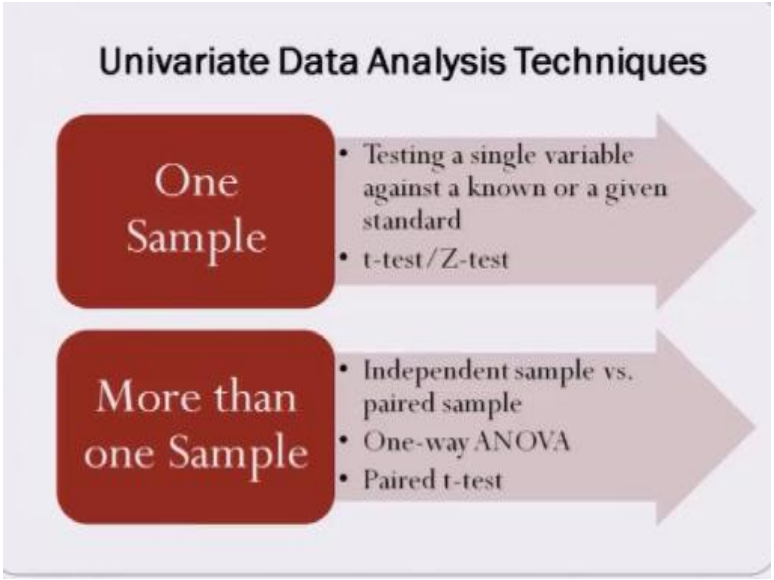

Dr. Shashi Shekhar Mishra: So now going into the, each one of these first we look into this univariate analysis techniques. Univariate analysis techniques can be further understood in terms of one sample or two or more than two sample type of univariate data analysis, one sample is basically testing a single variable against a known or given standard. Like many a times we are interested what was the class score in a particular quiz with respect to the average marks scored so that is basically a sort of one sample test and the most common method which are employed are t-test or Z- test.

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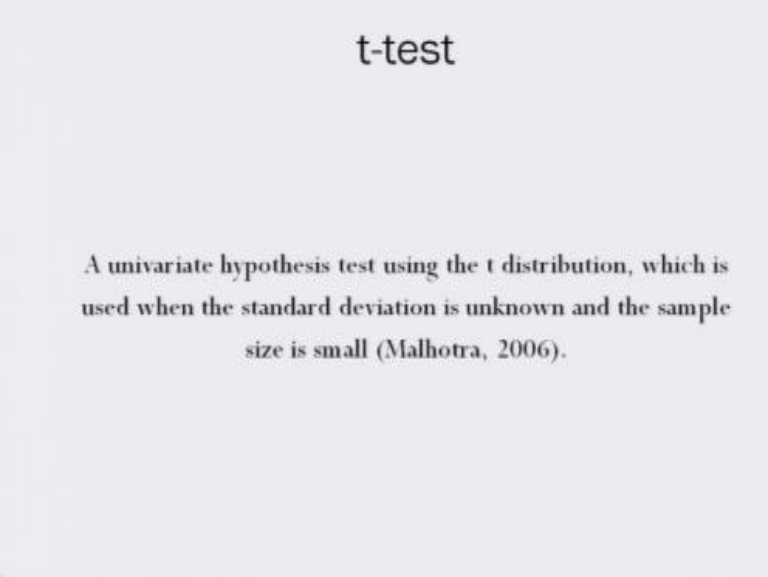

Dr. Shashi Shekhar Mishra: A t-test is a basically univariate hypothesis tests using the t distribution where in which is used when the standard deviation is unknown and the sample size is small, however when sample sizes redictate and the standard deviation is known you might go for the Z-test.

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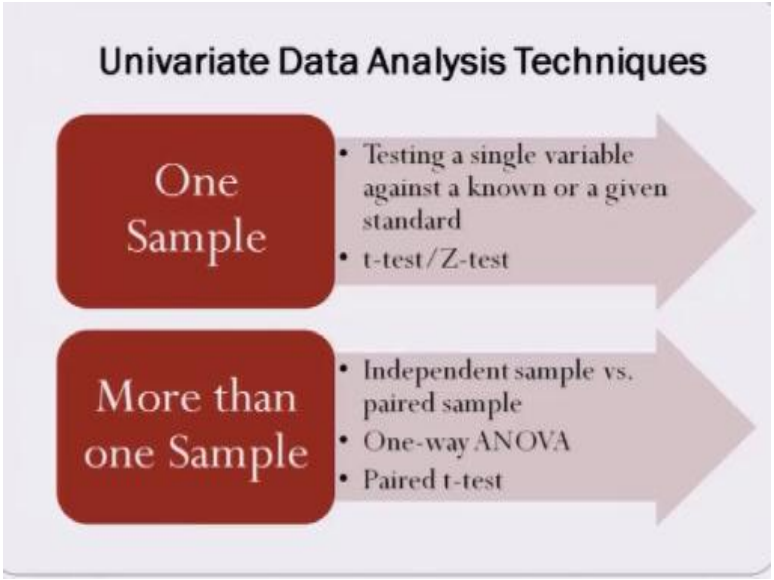

Dr. Shashi Shekhar Mishra: In the case of more than one sample or two or more than 2 sample you will find out that two types of samples can be drawn that independent samples are drawn which have no correlation that, or you draw basically the paired sample, the same respondent are ask the questions about two different brands or the same respondents are asked the question at two different point of time then that is a basically peer sample and in such cases the techniques which are employed for the data analysis is one way and over a paired t-test.

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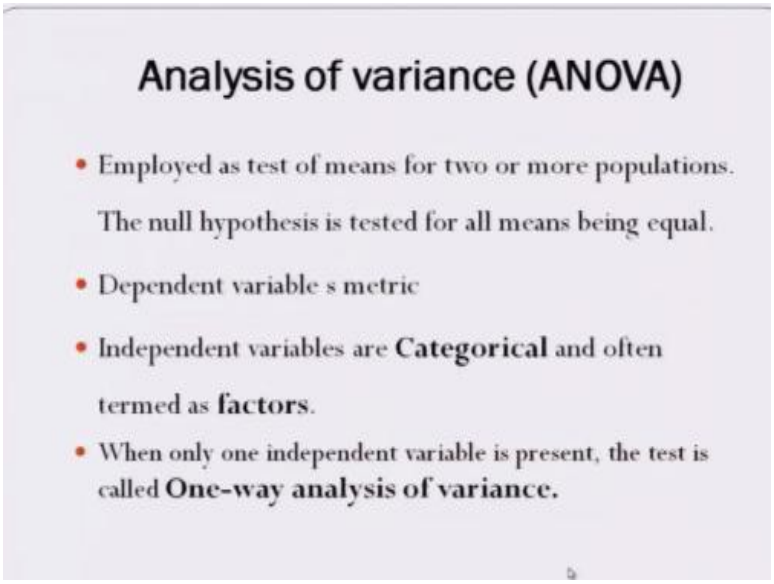

Dr. Shashi Shekhar Mishra: Now talking about this analysis of variance that is commonly referred as ANOVA employed as test of means for two or more population. The null hypothesis is tested for all means being equal so you have to understand that the different samples are, the different samples which you have for testing. The null hypothesis corresponding to them is that is μ is equal all the means are equal that μ1=μ2=μk or whatever, where μ is basically the mean of that sample actually.

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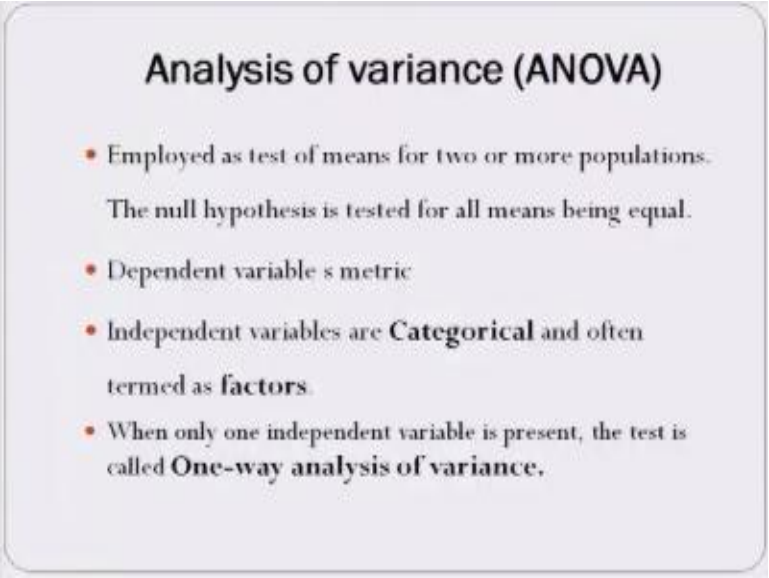

Dr. Shashi Shekhar Mishra: Now you will see that in this case the dependent variable is metric that is either in the interval or basically a ratio scale form. However the most important thing in the ANOVA to note is that the independent variable is categorical and often termed as factors okay, this categorical mean that it is in the nominal scale type or there are categories, sort of high, medium, low, or good, better, or best, or those kind of different kind of categories of the variables being measured.

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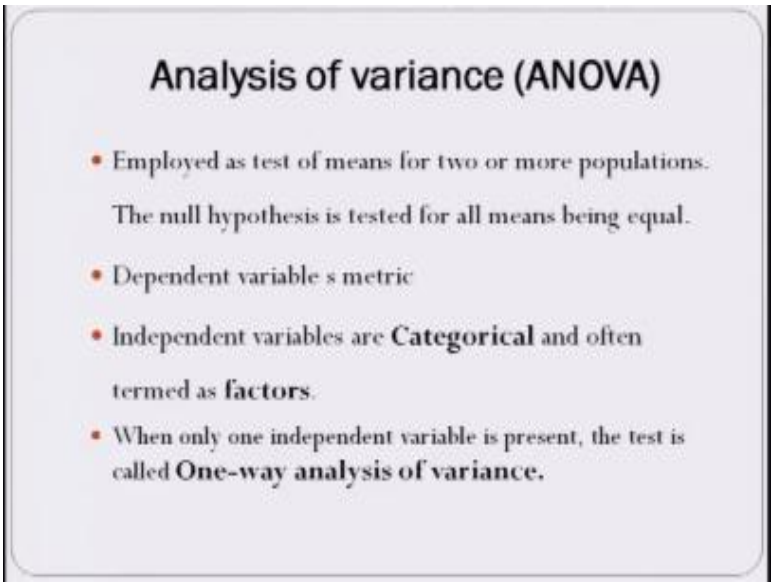

Dr. Shashi Shekhar Mishra: When only one independent variable is present the test is called one way analysis of variance. You will see that in the univariate analysis we will be talking about one way analysis of variance because only one variable is being measured, and you will see that this, this categorical independent variable is called factors and the different label of this factor is termed as basically the, the treatments. I will give you an example where probably, which will explain you the use of this one way of ANOVA, one way ANOVA, here as you can see that we had 30 respondents and these 30 respondents

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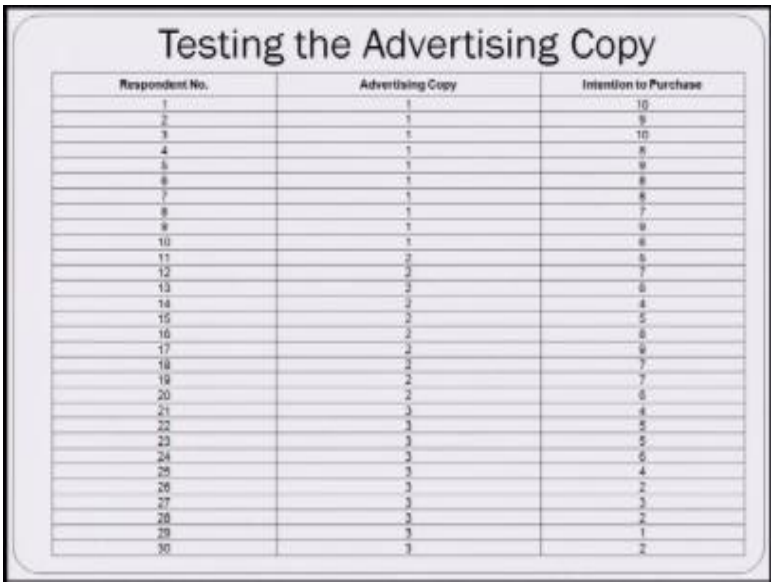

Dr. Shashi Shekhar Mishra: Were exposed to each ten of them were exposed to a three different type of advertising copy that respondent 1 to 10 has been exposed to an advertising copy. The first type of copy, then you had a second basically type of advertising copy and then you had a third type of advertising copy on which was basically given or which was the respondent number 21 to 31, to 30 were exposed to this third copy, and what we have measured after showing them the advertising copy was their intention to purchase that particular brand about which this advertising copy was created.

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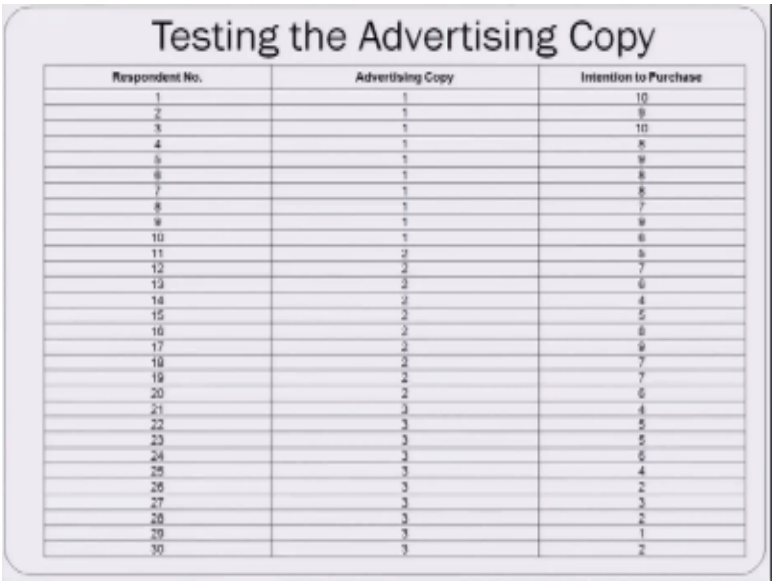

Dr. Shashi Shekhar Mishra: Then you see this and this is one, one variable that is advertising copy it has three labels or three treatments. So one factor, three treatments, and the dependent variable is intention to purchase. The null hypothesis here is that, that for each of these three different type of copy the intention to purchase is same.

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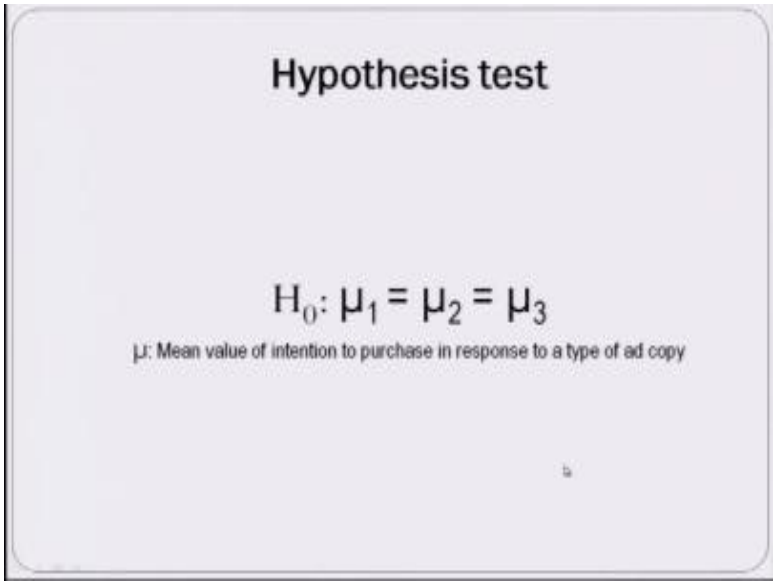

Dr. Shashi Shekhar Mishra: So null hypothesis as you can see is, the mean of intention to purchase for advertising copy 1, advertising copy 2, and advertising copy 3 are the same.

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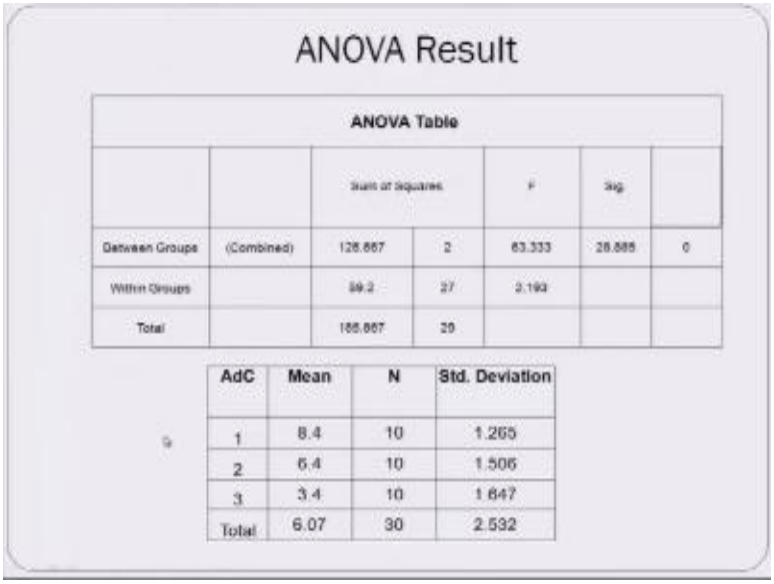

Dr. Shashi Shekhar Mishra: When we perform the ANOVA I am not going into the detail of this analysis or the method which is used to basically to perform the ANOVA. However I am going to discuss about the results, as you can see when that this, this results between the groups are significant that means we can reject the null hypothesis that.

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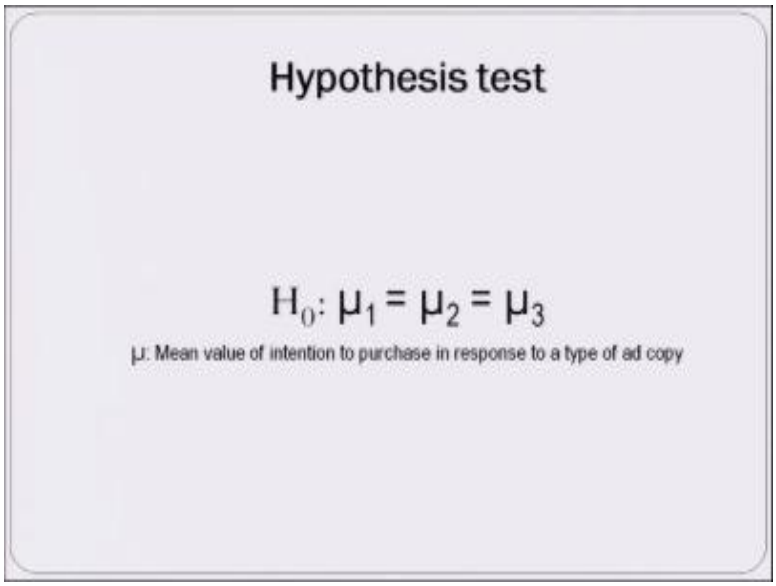

Dr. Shashi Shekhar Mishra: μ1=μ2=μ3, however we have to also see that if μ1= μ3, then we have to also test the individual hypothesis about μ1=μ2, μ2=μ3 and μ1=μ3.

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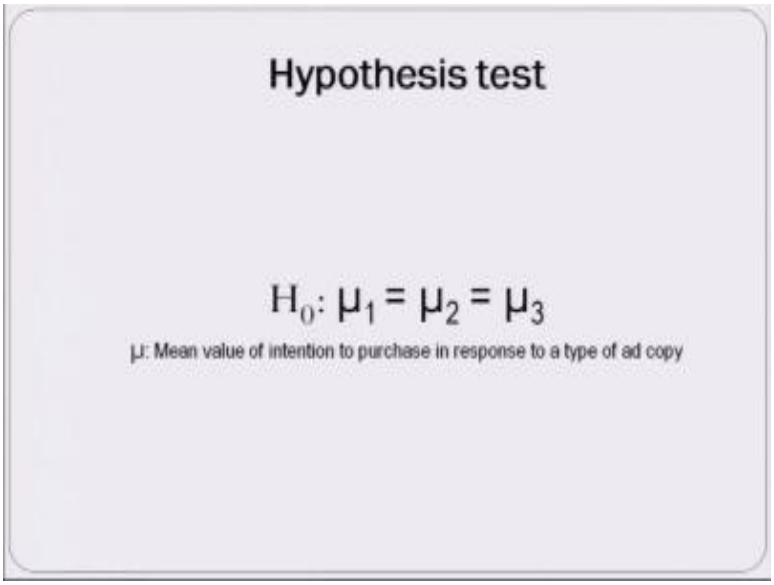

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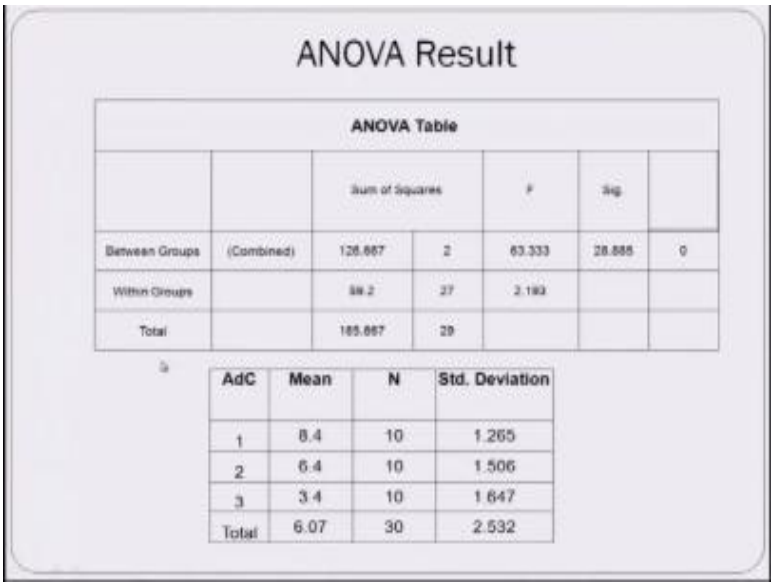

Dr. Shashi Shekhar Mishra: However if I, if you look at the data probably or probably if you look into the descriptive statistics of this table, given in this table you can see that mean of corresponding to advertising copy 1 is very high, so μ1 is very high and this corresponding to this you have the highest purchase intention, corresponding to this ad copy 3 you have the least basically mean is quote to say that, probably intention to purchase is least in that copy. However, we need to also test basically the means of the individual to the individual two copies to predict about the, the exact nature of the relationship between the any two copy and the purchase intention.

Then coming on to this, going beyond this unitvariate data analysis we have multivariate data analysis techniques, where this multivariate data analysis techniques as I have shown it could be dependence.

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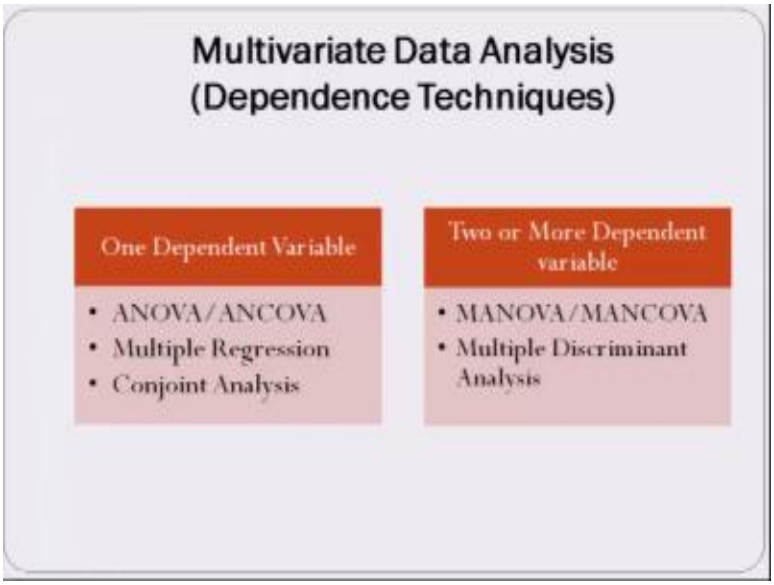

Dr. Shashi Shekhar Mishra: Technique or inter dependence, depending on the what kind of relationship the variables have that if variables are in the nature of dependent variable and independent variable you have dependence techniques while if your variables are inter dependent then you have a different set of data analysis techniques. Now coming on to this dependence techniques, when you have only one dependent variable you the commonly used techniques are ANOVA, ANCOVA, multiple regression, conjoint analysis. When you have two or more dependent variable you have a MANOVA, MANCOVA and multiple discriminant analysis which are commonly employed.

Now, depending we have to also look into the specific things like what is the nature of the dependent variable, what is the nature of independent variable that will help us in understanding whether we should go for ANOVA or we should go for the multiple regression or we should go for multiple discriminant analysis.

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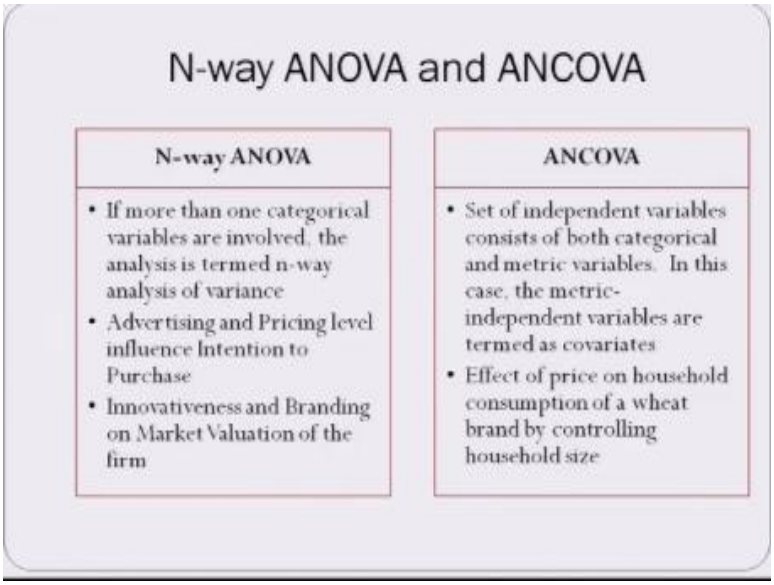

Dr. Shashi Shekhar Mishra: Now coming onto the endways Enova as I have already talked about Enova you see that you have one variable or one factor you call it one way Enova, when you have more than one categorical variable the analysis is stamped as n-way analysis of variance, like we are commonly interested in many relationship where more than one variable effect is

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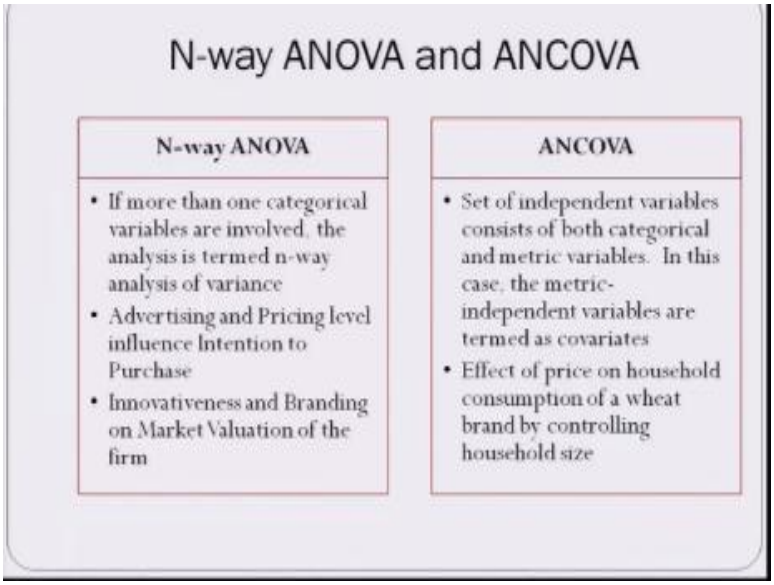

Dr. Shashi Shekhar Mishra: Probably we are interested in the effect of more than one variable on the dependent variable like previous example was this example was about advertising copy the effect of the type of advertising on the intention to purchase, however if we also include in this analysis that price level then probably this turns into n-way or two way Enova because you have two factors that are being manipulated and then

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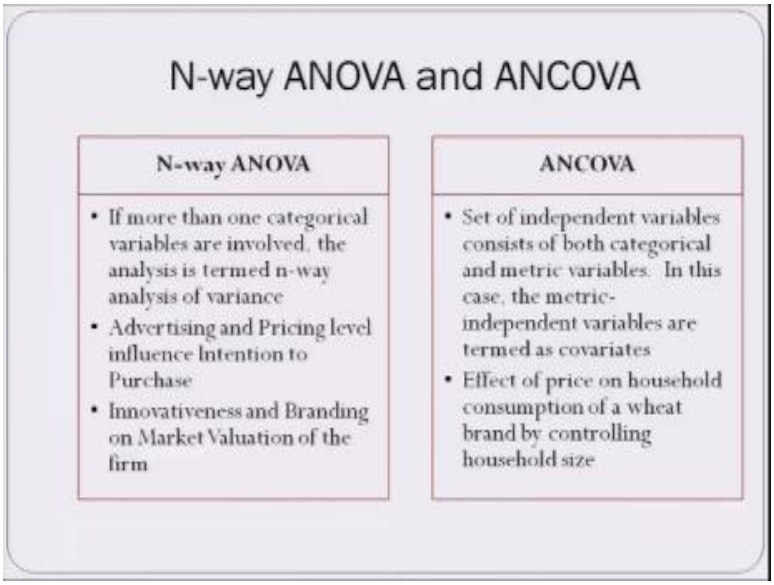

Dr. Shashi Shekhar Mishra: Then basically the intention to purchase has been measured. Similarly you can also see that to many a times this comes across that what is the market valuation of a form depending on its innovativeness and branding or the brand equity. So as the level of innovativeness changes and the level of basically branding or the brand equity changes the market valuation of the form also changes.

Now a different form of this ANOVA is that is ANCOVA were if you, where a set of independent variable consist

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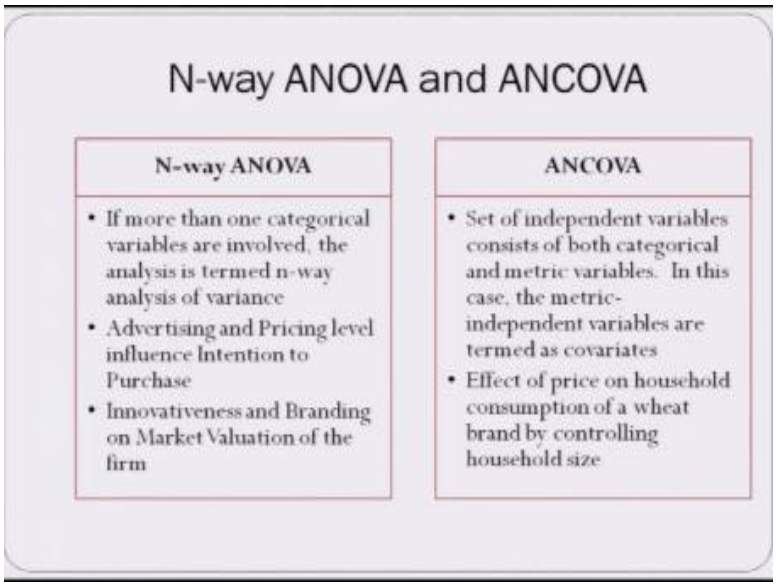

Dr. Shashi Skekhar Mishra: Of both categorical and metric variables. In this case the metric variable are termed as covariate. You will see that if in this example of one way ANOVA if I had basically a one variable which was in the form of the metric variable. Supposedly we had price levels or what you say the exact price and then we see what is the intention to purchase you will see that since the price is basically variable in the form of metric variable this is called as ANCOVA as you can see the example the effect of prices of, on house hold consumption of a wheat brand by controlling household size.

So in this example the categorical variable is the price and there could be two three or whatever level of the price level and that the price has effect on the household consumption of a particular serial brand, however here it is very important that you need to control the size of the household because without controlling the household size the effect of price on the consumption level will not probably be a very accurate prediction of or probably the accurate measurement or form of the relationship that we are capturing to that analysis.

So with this probably I conclude this session and then we will meet in the next session we will talk about the remaining techniques which are multivariate techniques which are employed in the

marketing research and I will conclude with that this marketing research or the capturing marketing, capturing market inside module of this course. Thank you very much.

Acknowledgement
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