Research for Marketing Decisions

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Lecture - 24

Measurement and Scaling: Non Comparative Scaling - Likert Item Scales

Good morning, everybody. Okay, anyways, let's proceed from where we left in the last class. We were talking about non-comparative methods of measurement of scaling. If you remember, what is the difference between measurement, scaling and scale? Measurement is assigning numbers or symbols to characteristic of object based upon certain rules.

Rules have to be standardized, specified, should not change from object or over time. That is measurement. Scale is a continuum upon which the measured objects are located. Scaling is the process by which it is done. There are four types of scales.

Nominal, ordinal, interval and ratio based upon characteristic of description, order, distance and origin. Then there are comparative and non-comparative scales. In comparative scaling. we have comparative techniques to compare objects, and then locate them on on the scale that is an ordinal scale. Whereas a non-comparative we rate the object the characteristic of an object at one single point we do not compare it with anybody anything else, we take only the measure on the characteristic of object Without its comparison with anything, we rate them independently saying that I like Pepsi from 1 to 5, 5 strongly agree, 1 strongly disagree. So you are not asking I like Pepsi more than Coke.

So that will become comparative. In non-comparative, you rate one object on its characteristic at a time. You do not compare. Compare it with something and do it. Do not compare objects.

You rate them independently or separately. I would not say independently but separately you rate them, So that becomes a rating.

That the kind of scale that you arrive at. It is an interval scale. And with the interval scale you can do a lot of statistical analysis.

So we then were talking about the Likert Item. likert item is a.... what is an item or a statement? an item or is an item, statement, question is the same thing, which you ask which has the options like at answer options strongly agree five, to strongly disagree one, that is a like at item question or statement. You can measure a particular concept through one question statement. You can measure a concept through multiple statements as well.

So, we will be looking at all that today. Now, how important is for you to know this is because at every place wherever you land up, it will be an assumption at that workplace that you know making survey. You know what is like at item scale, like at item statement. And you will have to, when asked to do a survey, you will have to do it. There is no if and but then.

So please pay attention because this is the most expected thing from an MBA student. Whether you are doing in marketing, finance or anything, you should know how to make a survey questionnaire. I had an internship in marketing, I was asked to do oh you are from a particular Institute, so must be knowing the finance. I took marketing internship but I did some finance I was asked to do some finance work also, and surveys, interviews, these are expected that you would know. So anyways moving forward so likert item statement, question item, is a single statement which has the likert type options and you can measure a particular concept to one statement. Let's say I want to measure the boredom in this class. I want to make the measure this concept of boredom in this class right? so I put a single statement that I yawn frequently the marketing research session. Right? I can measure boredom through yawning also, can I measure that? when I measure this this so, yawning is a observable behavior one we can observe., but boredom is there in the mind I do not know only when somebody yawns I know it is boring.

Right? So this is how you measure a concept. Boredom is a state of mind where your mind feels lazy and doesn't want to do anything actively. So that is a concept. There is a definition.

But how should I measure it? Using a Likert item scale is one way to measure. Asking you, I yawn frequently in the market research class 1 to 5. If strongly agree, I know that boredom is there. There are other ways.

The cameras are there. They are seeing who are yawning. If I see more than 10% classes yawning, it means for some bit of students, the session is boring. Right? So, I can have different type of measures also.

But all the measures... They are very good if they look at observable behaviors, observable things. Concepts that we measure are in our mind, in the mind of the customer that we do not know. So we try to put the statements that they can give answers to and many times these statements are observable. These items, statements, questions, they are observed,

at least the customers can observe this thing, if not us. In marketing, human resources, many of the customer related things many concepts are there in the mind which we do not know so we have to use the non-comparative comparative method in non-comparative the likert item scale. Likert item question is very very important, so likewise there are many examples I have taken from various places including the slides of a very famous professor I will tell you at the end. Now there are times when we take the multiple statements to measure something. This is an example where a Likert scale to measure consumer beliefs about a particular department store.

So one can have multiple statements also measuring a particular concept. And how you will take the score? You will take the average of this. Always try to put strongly agree as more score 5, and strongly disagree as 1, so 5, 1. So you have equal intervals try to do that there are other so measure relative importance of choice attributes so what is happening in this case, although you are looking at relative importance, but you are using the rating if you look at choice attributes related to let's say a particular business restaurant, fair prices, need, friendly personal, convenient location. Now in this case, actually what is happening is this is not a this is not a multi

statement scale to measure one particular concept, this is different. It is comparing the choice attributes, but through rating which means fair price how important it is? Neatness, how important it is? so, you will have score on 1 to 5, you know something which has a score of 5 is more important than the other. You are again doing compare in this way. In this you are doing in a way comparison but you are doing comparison through non-comparative scaling because you are taking rating and you are comparing the rating scores. In this case, this is not an example of measuring a concept through multiple statements. This is an example where you are trying to compare the different

attributes in terms of their importance, but using the non-comparative scaling. So likewise, now this is about the Kmart, the attitude towards the store.

This is a multiple statement concept. How do I know what the target customer thinks about the Kmart? I do not know by looking at their face. I have to ask these likert item statements. Now, these are multiple statements.

All together, the average of their scores will tell me attitude of the customer towards Kmart. Now this is a, when we use multiple summated rating scales, summated means when we have multiple statements measuring a particular concept. Why they are called summated? Because we can calculate, let's say when you were measuring attitude towards a particular store, attitude towards Kmart, you had multiple statements. Measuring different aspects and overall you are measuring the attitude towards the Kmart store, so you will take the either summation of all the scores on all the statements to measure the attitude, or you will either take the average generally, we take the average, but average is arrived after taking some and divided by the number of statements, so we take tell them as submitted rating skills.

For example, I want to again, let's say, measure the same boredom in this class. And one of the item I used was, I happen to yawn frequently in the market research class. This is one of the items. So I can measure this concept using one statement. But yawning can also happen because you did not sleep well.

Right? Yawning could also happen because this is your habit. So, you have multiple, you can have other statements also. I feel very lazy in this session. My mind does not feel active or maybe I do not, I am not able to pay attention in this class.

So, all these, when I use multiple statements to measure a concept, that becomes like a scale. Otherwise, it is like an item. And you can measure the same concept through either one statement or multiple statements. When you are using multiple statements, you will take the average.

Let's say five statements are there. You have scores 5, 4, 4, 4, 4. Take the average. That is the score on the concept that is measured through five statements. Let's say boredom in this class.

The boredom, how we can observe is through yawning, through somebody feeling lazy, somebody not wanting to work, somebody not looking at the instructor and at the slides right maybe, something else also what what else, could be so you might you you

definitely would be able to tell me what can be some other indicator brain freeze so when I use multiple statements to measure a concept, the accuracy of measurement goes up and I use the summated summated I use the average of the scores to measure that particular concept and this is very popular using multiple items to measure a concept is a very popular method, specifically attitude measurement in marketing is very very important and it is measured through multiple. So attitude towards store, attitude towards Levi's jeans, attitude towards Hyundai cars, attitude towards this, attitude towards that. When you measure attitude, attitude is your evaluation of something.

Whether you see something as good or bad, positive, negative. And if you do not have a positive attitude towards something, you might not actually buy it. So attitude becomes very important and we measure attitude through multi-question scales. That is why attitude is very important. Now, education is a very different business.

Here, even if people do not have a positive attitude about a certain course, they have to attend it. Because we enforce attendance. Right? But attitude in marketing where you have a free will to buy something or not to buy, attitude plays a big role, and we measure attitude through submitted through multiple questions, and they take the submitted score, average score, let me be more precise. This is about a commercial an ad if you want to measure whether an ad has the attitude towards ad of your respondent if you are trying to broadcast an ad and you have three copies

you call up, you show that to a sample audience all the three ads and take the scores on all this scale and take the average of each person to find out which ad is being liked more than the other. How would the data appear for likert type scales? let's say you have nine items oh sorry, let us say you have 10 items. So this is item 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. You have 10 statements measuring a single concept. This is for respondent number 1.

You have 10 statements. So you will take the sum of 10 items and better is to divide it by 10, so you will know on 5 point scale because each statement was measured on 5 point scale, the score is for this respondent 3.1 on this particular concept you can either leave it just with the sum also where you know the maximum score for each item maximum score is 5, 5 into 10 out of 50 it is 31 you can either take it as out of 50 31 or out of 10 it is 3.1 or out of 5 it is sorry out of 5 it is 3.1 or 50 31, better is to take the average because you know you measured something on 5 point scales 3.1 is somewhere near the neutral. So likewise for every respondent you have this is the data, this is how you data enter the data in the excel sheet or any analysis sheet.

Any questions? Yeah, please. When you take some, does it mean that all questions has to be similar? Let's say, if you want, if I add this, all questions would be, do you like the ad? Does it make you feel happy?

So we can't have one question. Yes, when you have multiple items measuring a single concept, right? then all the items should be about that particular concept and can vary a bit from each other because each item should should capture a different aspect of that concept for example, we will be discussing that so when we take the summation when all the statements are measuring the same concept together so, as I said boredom in the class, I cannot measure with single item I am using multiple items five items yawning frequently, not able to concentrate, and three more, all these statements together are measuring the boredom in the class and they all are capturing a different aspect, a different behavior which comes out of which is a representation of boredom, with boredom one may yawn, with boredom one may not be able to concentrate, when with if boredom is there somebody would not be paying attention to the board and what is happening, right? now each one is a different behavior but all are indicating boredom

Right? All are capturing a different behavior which comes, which is a representation of boredom. And if boredom happens, all will happen. That is the idea. If boredom happens, all will be present.

Very good question. That for a certain respondent, let's say, uh, the respondents, the responses are polarized. So I yawn frequently in the class, market research class, strongly agree. I feel, uh, inattentive or I am not able to concert. I do not concentrate on what is happening in the class.

Strongly disagree. The third one is, uh, do not ask question in the class strongly disagree, so that is also a sign of boredom when you do not participate right? so what will happen is one is before we use these multiple statements we run certain tests of reliability and validity we will come to that to find to to make sure that if that concept boredom happens all these five should happen, these five should be representative of boredom, so which means there would be a correlation, but if still you are getting the polarized one possible reason is somebody who is filling has is not paying attention while filling because if the state if the if the multiple statement is the correct scale it is very difficult that you will get polarized answers for different different statements it is very difficult because you are testing it in such a way that you have pre-tested it such that you they all are consistent with each other. But even after that if it happens which means

the more likely is that all the options would be either towards the lower side or higher side for everybody, but in between the responses could vary, but it generally, it does not happen that it they vary so much. So, that is the pretest we do that for all the statement that we use they are consistent with each other in the sense that they move together in the same direction, they have a same directional correlation either you know, positive they move together or negative they move together. We will come to that. There is a following slide on the multi-item scales and we will get into the depth of that.

We will look at the intro version as one of the example to be more clear. Now, moving forward in the Likert item scale. Sir. Yeah. Sir, suppose the skill is there that how the youth yawn very frequently, somebody may mark it as strongly angry even if he yawns only once in the class and somebody might tick on strongly agree only if he yawns 10 times in the class.

Yeah, so there is little bit of ambiguity is there. So, that is why when we will discuss the multiple question scales, there are these errors biases, the wrong answers to a particular statement will be taken care we will come to that. There could be better ways yes of doing that maybe with the when one way is instead of strongly agree you say what do you consider more see in a class of 1 hour 40 minutes yawning let's say every 10 minute so, which means how many will be there so whatever number is there? 10 minutes.

So 6 plus 4. 10 times. Now 10 times you say 10 plus 5. Indication in the bracket you can put 10 plus times. So to get more correct answer you can actually use these indicators.

Descriptions along with that. But it is a good question that it is going to be ambiguous for certain people. So when we use the descriptor like strongly agree, strongly disagree, there that is one type, there are other descriptors that relate to quality when you are measuring quality then you can use excellent, good, fair, poor, so this is four points 4 3 2 1. So suppose you are measuring quality of the restaurant and you have different aspect of that restaurant food, cleanliness, service so, you can use instead of strongly agree to strongly disagree you can use these indicators excellent, good, fair, poor. There are other indicators of quality which is given very good, fairly good, this one.

These are indicators when you are measuring quality you can use such a description for the likert answer options rather than using strongly disagree, strongly agree. If you are measuring importance, so you can use very important to not at all important. If you are measuring interest, very interested to not very interested. Continuum. If you are measuring satisfaction, completely satisfied to completely dissatisfied.

Frequency. So again, the question about yawning. If there are, we are asking about such behaviors. Let's say you want, you have given a questionnaire, you want to just see whether somebody is focusing while filling up the questionnaire. Somebody is not just marking.

You can insert two questions. One is, I can run 5 kilometers in 5 minutes. Or 5 kilometers in 2 minutes. And you can put the indicators very true to not at all true. If somebody is saying very true, you know this person has not failed it.

But do not have only one statement. Have another statement. I can eat 1 kg ice cream in 1 minute. Something like impossible statement.

If somebody is saying yes, true. Then it means they are lying. You need not, that survey you may discard because the answers are wrong. It is not, suppose you write, I never, I have never lied in my entire life. I don't know whether, I have lied lot of times.

I think everybody would have lied once or more situation. Every day we lie actually, you know, for good or bad, whatever. So, if somebody is saying I have never lied, true. You know that this is a wrong answer. So, likewise you need to insert some statement to know the truth of the data that you are getting.

These are the checks that you use. Sometime you use checks based upon social desirability. Which means people when they fill up the survey sometime they try to appear socially desirable. You might have seen in socially desirable is a very you know interesting behavior, in some gatherings if a child is not behaving well the parents or the mother would you know would pacify the child or say something in the air that please calm down don't create a scene or or What happened?

Is there any problem? I can sort it out for you and so on. Right? When crowd is watching, suppose that crowd would not have been there. There would be different response, right?

So we try to behave, become socially desirable. And sometimes when we are using a survey questionnaire, we put questions that capture how much Socially how much responses are given in such a way that to appear desirable but they not they may not be actually the right responses. So we also use socially desirable sometimes scale. If somebody has a high score on social desirability multiple item scale.

If somebody has a high score, we know that this person has not given the true answers. He or she has tried to appear very desirable, socially desirable, socially right. So we also

do not want such people. So when we do market survey, we are assuming that we don't know the true answer. So how can we decide if something a person is giving is true or not?

So that's what I'm saying. If the question is, I have never lied in my life. Is it possible? I can run five kilometers in two minutes. That's what you have to put such statements, which are, you know, even the world record holder would not have done that.

Even it's not a very socially desirable thing to run five kilometers. No, no, that is for the truth of the answers, whether somebody is not just sticking. If somebody is just sticking without looking at, you know that you will catch that. Now, social desirability, how you will catch? I have never lied in my life.

I have never hurt intentionally or unintentionally anybody in life. These statements you will get to know whether true, false, in between. So you will get to know somebody is trying to appear socially desirable or not. And then you, depending upon the scores, the summated scores, you can decide whether you want to keep throw away so such surveys because those would have biases inserted, and we do not the idea of doing survey research is to get to the truth of the concept or phenomena not to take the bias responses to chunk out these biases. So while when we do survey, we try to ensure that the answers are correct. How to do that?

to use all these checks when we are doing it. Sir, do you think that when it was ever in a particular location we should just have some local people in our team so we know what are the biases in this area like? See, it's very difficult when even when you have local people first of all you are outsider why they will open up to you. Second is these biases are among their community itself there would be biases among themselves. Many times these biases they are not aware of.

So you will have to get these biases by asking such questions. There are other ways also. There are many many ways that have been there to catch the incorrect responses these are some of the commonly used and one should use it in order to, or if you are not personally doing the surveys when you are giving it to a market research agency you know that how to evaluate the correctness of the data, you have to ask them to include such questions only then you will get the correct. So one of the many of you would be administering some study with the help of some survey team you have to tell them because this is your job to get the right kind of data for your brand or organization and the more see such

things when you use your superior your seniors would also get an idea that I can believe this data, there are enough checks and balances my employee has used so there is no

reason that I cannot believe because there are enough checks and balances that are used.