Measurement scales in marketing research

Measurement Scales If a researcher is going to use statistics properly, it is crucial to consider the kind of data about which descriptive statistics are to be calculated or to which will be applied some kind of statistical test. Statistical analysis, even simple analysis as counting, requires that each characteristic to be studied be assigned a unique value.

Sometimes, especially in qualitative research with small samples, this value can be a word or symbol. For example, the interviewers could assign the word yes or positive to the symbol "+" to indicate that a respondent liked a product, flavor, or company. For a computer to prepare summary statistics or conduct a statistically analysis, each measurement of the sample population must be assigned a number. There are four categories which numbers are generally grouped. In increasing order of sophistication, they are (1) nominal numbers, (2) ordinal numbers, (3) intervally-scaled numbers, and (4) ratio-scaled numbers.

These numbers are called data and are classified through scales. Marketing research data is classified either metric or non-metric. Metric data are measured data, such as income, age, years or schooling. When the data are metric it can be thought to terms of average: What is the average income? Average age? Average years of school? Non-metric data on the other hand, are counted data. Gender, place of residence, and level of education are all non-metric data.

When the data are non-metric we think in terms of percent-ages: What proportion of Kentwood residents are male? What percentage of the population is Hispanic? What percentage of Davenport students were born

outside the country? All non-metric data are and always will be considered continuous. Marketers often refer to the " levels of measurement" of a variable, a measure, or a scale to distinguish between measured variables that have different properties" (Lane, 2003). There are four basic levels which have already been pointed out, nominal, ordinal, interval, and ratio. All primary data collected are either metric or non-metric. Figure 1, shown below, classifies the 4 types of data either to Non-metric or Metric. (Chakrapani, 2004) Ordinal Data.

Ordinal data numbers are assigned to give order to measurements. Ordinal data are a special case of non-metric data in which assignment of numbers to categories has fundamental mean. Consider the following assignment of numbers: 1Captain 2Major 3Colonel 4Field marshal As the scale value increases, so does the rank. However, it cannot assume that the difference between the ranks of captain and major is the same as that between colonel and field marshal. Ordinal data naturally arise in marketing when customers rank different brands in the order of their preference. In marketing, the distinction between metric and non-metric data is not always clear-cut.

If a consumer rates a product on a five-point scale in which 1 stands for least satisfied and 5 for most satisfied, is the scale metric or non-metric? Ordinal Data in Action. Ordinal data is present in several types of questionnaires or surveys. One type of survey was found while doing research on ordinal data, Likert Scales. Rensis Likert invented what is called the Likert Scale. This is a special kind of questionnaire that " uses a set of responses that are ordered so that one response is greater than another" (Andreasen, 2002). Usually this term is brought up when five or more options are available.

An example might be: " How would you rate your professor? " 1= very incompetent 2= somewhat incompetent 3= neither, competent 4= somewhat competent 5= very competent Likert Scales can be thought to be only interval scales because, when well constructed, there is equal distance between each value. But actually classifying a " equal distance" is merely impossible to achieve when dealing with this type of data. (Lane, 2003) Using the Likert scale to conduct a questionnaire will be ideal to convey our ordinal data because the Likert scale is the most widely used scale in survey research. Actually the Likert scale is used right here at Davenport University. Every semester we are given two of these " surveys" or " questionnaires" to fill out. The first " questionnaire are only for the professor eyes, giving him/her ideas to improve his class.

The second questionnaire is strictly confidential to the administration testing the professors' work. Nominal Data. Nominal data on the other hand can be easily measured. In surprisingly large number of cases, the number that is assigned to anything is entirely random.

If number are assigned arbitrary numbers, it can be called Nominal numbers. Nominal data has a sole purpose to " differentiate an item possessing one characteristic from an item possessing a different characteristic" (Andreasen, 2003). A good example is a number assigned to a sports player. The number can differentiate between players without confusion.

These numbers have no meaning other than this differentiation. A good way to use this in a questionnaire is to ask individuals questions such as their

sex, marital status, employment status, ownership. Interval Data. Interval data is completely different than the first two.

This type of information or data is all metric data. This means that we are able to measure the responses without much trouble. A good example of this type of data if outlined in Andreasen's book: Marketing Research That Won't Break the Bank. Andreasen does a good job explaining the difference between our numbers given. He states that " we assume that the distance or interval between the numbers has a meaning". An example Andreasen gives in the temperature scale.

The numbers between actually mean something. (Andreason, 2003) Ratio Data. Ratio data is somewhat similar to interval data because of the way it is measured. Both ratio data and interval data are considered metric data. Again we are able to measure the data with ease and little confusion. Ratio data can be used in a questionnaire without you even knowing that you are using it.

Every time we implement a survey we ask demographic questions such as age, education, income, ect. It is these types of questions that are used and are considered " ratio". Conclusion All in all, data for these questionnaires are can be simple but require accurate measurements. Ordinal data or the ordinal scale is clearly hard to differentiate between values but can be useful to get a quick result about a product or service. There are many ways ordinal data or any data for that fact that is used every single day in marketing research.

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