CHAPTER 10: COLLECTING DATA USING ATTITUDINAL SCALES
Skill Enhancement Course in Economics
B.A.(P) IVth Semester : Research Methodology

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Measurement of attitudes in quantitative and qualitative research

There are a number of differences in the way attitudes are measured in quantitative and qualitative research. In quantitative research you are able to explore, measure, determine the intensity and combine attitudes to different aspects of an issue to arrive at one indicator that is reflective of the overall attitude. In qualitative research, you can only explore the spread of attitudes and establish the types of attitudes prevalent. In quantitative research you can ascertain the types of attitudes people have in a community, how many people have a particular attitude and what the intensity is of those attitudes. A number of techniques have been developed to measure attitudes and their intensity in quantitative research, but such techniques are lacking in qualitative research. This is mainly because in qualitative research you do not make an attempt to measure or quantify. The concept of attitudinal scales, therefore, is only prevalent in quantitative research.

Attitudinal scales in quantitative research

In quantitative research there are three scales which have been developed to 'measure' attitudes. Each of these scales is based upon different assumptions and follows different procedures in their construction. As a beginner in research methods it is important for you to understand these procedures and the assumptions behind them so that you can make appropriate and accurate interpretation of the findings. As you will see, it is not very easy to construct an attitudinal scale. Out of the three scales, the Likert scale is the easiest to

construct and therefore is used far more.

Functions of attitudinal scales

If you want to find out the attitude of respondents towards an issue, you can ask either a closed or an open-ended question. For example, let us say that you want to ascertain the attitude of students in a class towards their lecturer and that you have asked them to respond to the following question: 'What is your attitude towards your lecturer?' If your question is open ended, it invites each respondent to describe the attitude that s/he holds towards the lecturer. If you have framed a closed question, with categories such as 'extremely positive', 'positive', 'uncertain', 'negative' and 'extremely negative', this guides the respondents to select a category that best describes their attitude. This type of questioning, whether framed descriptively or in a categorical form, elicits an overall attitude towards the lecturer. While ascertaining the overall attitude may be sufficient in some situations, in many others, where the purpose of attitudinal questioning is to develop strategies for improving a service or intervention, or to formulate policy, eliciting attitudes on various aspects of the issue under study is required.

But as you know, every issue, including that of the attitude of students towards their lecturers, has many aspects. For example, the attitude of the members of a community towards the provision of a particular service comprises their attitude towards the need for the service, its manner of delivery, its location, the physical facilities provided to users, the behaviour of the staff, the competence of the staff, the effectiveness and efficiency of the service, and so on. Similarly, other examples – such as the attitude of employees towards the management of their organisation, the attitude of employees towards occupational redeployment and redundancy, the attitude of nurses towards death and dying, the attitude of consumers towards a particular product, the attitude of students towards a lecturer, or the attitude of staff towards the strategic plan for their organisation – can be broken down in the same manner.

Respondents usually have different attitudes towards different aspects. Only when you ascertain the attitude of respondents to an issue by formulating a question for each aspect, using either open-ended or closed questions, do you find out their attitude towards each aspect. The main limitation of this method is that it is difficult to draw any conclusion about the overall attitude of a

respondent from the responses. Take the earlier example, where you want to find out the attitude of students towards a lecturer. There are different aspects of teaching: the contents of lectures; the organisation of material; the lecturer's ability to communicate material; the presentation and style; knowledge of the subject; responsiveness; punctuality; and so on. Students may rate the lecturer differently on different aspects. That is, the lecturer might be considered extremely competent and knowledgeable in his/her subject but may not be considered a good communicator by a majority of students. Further, students may differ markedly in their opinion regarding any one aspect of a lecturer's teaching. Some might consider the lecturer to be a good communicator and others might not. The main problem is: how do we find out the 'overall' attitude of the students towards the lecturer? In other words, how do we combine the responses to different aspects of any issue to come up with one indicator that is reflective of an overall attitude? Attitudinal scales play an important role in overcoming this problem.

Attitudinal scales measure the intensity of respondents' attitudes towards the various aspects of a situation or issue and provide techniques to combine the attitudes towards different aspects into one overall indicator. This reduces the risk of an expression of opinion by respondents being influenced by their opinion on only one or two aspects of that situation or issue.

Difficulties in developing an attitudinal scale

In developing an attitudinal scale there are three problems:

1. Which aspects of a situation or issue should be included when seeking to measure an attitude? For instance, in the example cited above, what aspects of teaching should be included in a scale to find out the attitude of students towards their lecturer?
2. What procedure should be adopted for combining the different aspects to obtain an overall picture?
3. How can one ensure that a scale really is measuring what it is supposed to measure?

The first problem is extremely important as it largely determines the third problem: the extent to which the statements on different aspects are reflective of the main issue largely determines the validity of the scale. You can solve

the third problem by ensuring that your statements on the various aspects have a logical link with the main issue under study – the greater the link, the higher the validity. The different types of attitudinal scale (Likert, Thurstone and Guttman) provide an answer to the second problem. They guide you as to the procedure for combining the attitudes towards various aspects of an issue, though the degree of difficulty in following the procedure for these scales varies from scale to scale.

Types of attitudinal scale

There are three major types of attitudinal scale:

1. the summated rating scale, also known as the Likert scale;
2. the equal-appearing interval scale or differential scale, also known as the Thurstone scale;
3. the cumulative scale, also known as the Guttman scale.

The summated rating or Likert scale

The **summated rating scale**, more commonly known as the **Likert scale**, is based upon the assumption that each statement/item on the scale has equal **attitudinal value**, 'importance' or 'weight' in terms of reflecting an attitude towards the issue in question. This assumption is also the main limitation of this scale as statements on a scale seldom have equal attitudinal value. For instance, in the examples in Figures 10.1 and 10.2, 'knowledge of subject' is not as important in terms of the degree to which it reflects the attitude of the students towards the lecturer as 'has published a great deal' or 'some students like, some do not', but, on the Likert scale, each is treated as having the same 'weight'. A student may not bother much about whether a lecturer has published a great deal, but may be more concerned about 'knowledge of the subject', 'communicates well' and 'knows how to teach'.

FIGURE 10.1 *An example of a categorical scale*

It is important to remember that the Likert scale does not measure attitude per se. It does help to place different respondents in relation to each other in terms of the intensity of their attitude towards an issue: it shows the strength of one respondent's view in relation to that of another and not the absolute attitude.

FIGURE 10.2 *An example of a seven-point numerical scale*

FIGURE 10.3 *An example of a scale with statements reflecting varying degrees of an attitude*

Considerations in constructing a Likert scale

In developing a Likert scale, there are a number of things to consider. Firstly, decide whether the attitude to be measured is to be classified into one-, two- or three-directional categories (i.e. whether you want to determine positive, negative and neutral positions in the study population) with respect to their attitude towards the issue under study. Next, consider whether you want to use categories or a numerical scale. This should depend upon whether you think that your study population can express itself better on a numerical scale or in categories. The decision about the number of points or the number of categories on a categorical scale depends upon how finely you want to measure the intensity

of the attitude in question and on the capacity of the population to make fine distinctions. Figure 10.1 shows a five-point categorical scale that is three directional and Figure 10.2 illustrates a seven-point numerical scale that is one directional. Sometimes you can also develop statements reflecting opinion about an issue in varying degrees (Figure 10.3). In this instance a respondent is asked to select the statement which best describes the opinion.

Procedure

Step 1   Assemble or construct statements that are reflective of the attitudes towards the main issue in question. Statements should be worded to reflect both positive and negative attitudes towards the issue; that is, they should be for, as well as against, the issue. (If your scale is one directional, you need only positive statements.) Make sure that all the statements have a logical link with the main issue. You also need to decide whether you want respondents to answer in categories or on a numerical scale.

Step 2   Administer the statements to a small group of people to test them.

Step 3   Analyse the responses by assigning a weighting – a numerical value – to the responses. Numerical values are assigned differently to positive and negative statements. For a positive statement the response indicating the most favourable attitude is to be given the highest score. For example, on a five-category or five-point scale, 5 is assigned to the response that indicates the most favourable attitude and 1 to the response which indicates the least favourable attitude. By contrast, a person who agrees strongly with a negative statement indicates that s/he does not have a favourable attitude; hence, the scoring is reversed, i.e. 1 is assigned to the response where a respondent strongly agrees with a negative statement and 5 to the response where s/he strongly disagrees with it.

Step 4   Calculate each respondent's attitudinal score by adding numerical values assigned in Step 3 to the responses s/he gave to each statement.

Step 5   Compare all respondents' scores for each item to identify non-discriminative items. Non-discriminative statements do not help you to distinguish respondents with respect to attitude as almost everyone responds to them in the same way.

Step 6   Eliminate non-discriminative items.

Step 7   Construct a questionnaire/interview schedule comprising the selected statements/items.

FIGURE 10.4 *The procedure for constructing a Likert scale*

The procedure for constructing a Likert scale

Figure 10.4 shows the procedure used in constructing a Likert scale.

Calculating attitudinal scores

Suppose you have developed a questionnaire/interview schedule to measure the attitudes of a class of students towards their lecturer using a scale with five categories.

In Figure 10.5, statement 1 is a positive statement; hence, if a respondent ticks 'strongly agree', s/he is assumed to have a more positive attitude on this item than a person who ticks 'agree'. The person who ticks 'agree' has a more positive attitude than a person who ticks 'uncertain', and so on. Therefore, a person who ticks 'strongly agree' has the most positive attitude compared with all of the others with different responses. Hence, the person is given the highest score, 5, as there are only five response categories. If there were four categories you could assign a score of 4. As a matter of fact, any score can be assigned as long as the intensity of the response pattern is reflected in the score and the highest score is assigned to the response with the highest intensity.

The lecturer:	SA	A	U	D	SD
1 Knows the subject well (+)	5	4	3	2	1
2 Is unenthusiastic about teaching (–)	1	2	3	4	5
3 Shows concern for students (+)	5	4	3	2	1
4 Makes unreasonable demands (–)	1	2	3	4	5
5 Has poor communication skill) (–)					
6 Knows how to teach (+)					
7 Can explain difficult concepts in simple terms (+)					
8 Is hard to approach (–)					
9 Is liked by some students and not by others (+/–)					
10 Is difficult to get along with (–)					

SA = strongly agree, A = agree, U = uncertain, D = disagree, SD = strongly disagree

FIGURE 10.5 *Scoring positive and negative statements*

The lecturer:	SA	A	U	D	SD
1 Knows the subject well (+)	@				#
2 Is unenthusiastic about teaching (–)		#			@
3 Shows concern for students (+)			@		#
4 Makes unreasonable demands (–)		#			@
5 Communicates poorly (–)		#			@
6 Knows how to teach (+)		@		#	
7 Can explain difficult concepts in simple terms (+)	@	#			
8 Is hard to approach (–)			@ #		
9 Is liked by some students and not by others (+/–)				@ #	
10 Is difficult to get along with (–)			#		@

SA = strongly agree, A = agree, U = uncertain, D = disagree, SD = strongly disagree

FIGURE 10.6 *Calculating an attitudinal score*

Statement 2 is a negative statement. In this case a person who ticks 'strongly disagree' has the most positive attitude on this item; hence, the highest score is assigned, 5. On the other hand, a respondent who ticks 'strongly agree' has the least positive attitude on the item and therefore is assigned the lowest score, 1. The same scoring system is followed for the other statements.

Note statement 9. There will always be some people who like a lecturer and some who do not; hence, this type of statement is neutral. There is no point in including such items in the scale but, here, for the purpose of this example, we have.

To illustrate how to calculate an individual's **attitudinal score**, let us take the example of two respondents who have ticked the different statements marked in our example by # and @ (see Figure 10.6).

Let us work out their attitudinal score:

Statement no.	1	2	3	4	5	6	7	8	9	10	
Respondent @ =	5 +	5 +	3 +	5 +	5 +	4 +	5 +	3 +	2 +	5	= 42
Respondent # =	1 +	2 +	1 +	2 +	2 +	2 +	4 +	3 +	2 +	3	= 20

The analysis shows that, overall, respondent @ has a 'more' positive attitude towards the lecturer than respondent #. You cannot say that the attitude of respondent @ is twice (42/20 = 2.10) as positive as that of respondent #. The attitudinal score only places respondents in a position relative to one another. Remember that the Likert scale does not measure the attitude per se, but helps you to rate a group of individuals in descending or ascending order with respect to their attitudes towards the issues in question.

The equal-appearing interval or Thurstone scale

Unlike the Likert scale, the **Thurstone scale** calculates a 'weight' or 'attitudinal value' for each statement. The weight (equivalent to the median value) for each statement is calculated on the basis of rating assigned by a group of judges. Each statement with which respondents express agreement (or to which they respond in the affirmative) is given an attitudinal score equivalent to the 'attitudinal value' of the statement. The procedure for constructing the Thurstone scale is as given in Figure 10.7.

Step 1   Assemble or construct statements reflective of attitudes towards the issue in question.
Step 2   Select a panel of judges who are experts in the field of the attitudes being explored.
Step 3   Send the statements to these judges with a request to rate each statement's importance in reflecting an attitude towards the issue being studied. Ask them to rate each statement on an 11-point scale.
Step 4   On the basis of the judges' ratings, calculate the median value of their ratings for each item.
Step 5   If the judges' ratings of any item are scattered over the scale, this indicates that, even among the experts, there is no agreement as to the degree to which that statement reflects an attitude towards the issue in question. Discard such statements.
Step 6   From the remaining statements select items that best reflect attitudes towards various aspects of the issue.
Step 7   Construct a questionnaire/interview schedule comprising the selected items.

FIGURE 10.7   *The procedure for constructing the Thurstone scale*

The main advantage of this scale is that, as the importance of each statement is determined by judges, it reflects the absolute rather than relative attitudes of respondents. The scale is thus able to indicate the intensity of people's attitudes and any change in this intensity should the study be replicated. On the other hand, the scale is difficult to construct, and a major criticism is that judges and respondents may assess the importance of a particular statement differently and, therefore, the respondents' attitudes might not be reflected.

The cumulative or Guttman scale

The **Guttman scale** is one of the most difficult scales to construct and therefore is rarely used. This scale does not have much relevance for beginners in research and so is not discussed in this book.

Attitudinal scales and measurement scales

Different **attitudinal scales** use different measurement scales. It is important to know which attitudinal scale belongs to which measurement scale as this

will help you in the interpretation of respondents' scores. Table 10.1 shows attitudinal scales in relation to measurement scales.

TABLE 10.1 *The relationship between attitudinal and measurement scales*

Attitudinal scales	Measurement scales
Likert scale	Ordinal scale
Thurstone scale	Interval scale
Guttman scale	Ratio scale

Attitudes and qualitative research

As mentioned at the beginning of this chapter, in qualitative research you can only explore the spread of the attitudes. Whatever methods of data collection you use – in-depth interviewing, focus group, observation – you can explore the diversity in the attitudes but cannot find other aspects like: how many people have a particular attitude, the intensity of a particular attitude, or overall what the attitude of a person is. Qualitative methods are therefore best suited to explore the diversity in attitudes.