DIFFERENT SCALE CONSTRUCTION APPROACHES USED TO ATTITUDE MEASUREMENT IN SOCIAL SCIENCE RESEARCH

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ABSTRACT

Attitude is certainly the most typical and essential concept all over the world. There are number of variances in the definition of the term attitude. In well known definitions of attitude, it is concerned with reference to behaviour or a tendency to respond in a certain manner. Attitude tests are the most widely used tests and also the most useful tools of data collection in psychological and educational research. Many research studies have supported that there is a relationship between the values, beliefs, attitudes, intentions and behaviours of individuals. Attitude and intention are both the predictors of individual behaviour. Attitude scales are usually used for the measurement of attitude towards any other individuals, objects, ideas or things. These explain what the individual's acquired ways of thinking are for the present construct and that is attitude. The main focus of the article is to describe the five approaches that are extensively used to measure the attitude of people in Social Science research i.e.,arbitrary approach, Consensus scale approach, Item analysis approach, Cumulative scale approach and Factor analysis approach. The knowledge of appropriate approaches is very significant to measuring attitude of people. Moreover, the knowledge of all of the mentioned approaches and techniques will bend support to the every researcher to make an effective scale for measuring attitude. Although, every type of attitude measurement approaches and techniques are appropriate for the measurement of attitude, yet the choice for considering any approach and technique depends on research feasibility, knowledge, availability of literature and the nature, objective and need of the research study.

Key Words: - Attitude, Approaches, Measurement, Social Sciences Research.

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INTRODUCTION

Attitude is certainly the most typical and essential concept all over the world. There are number of variances in the definition of the term attitude. In well known definitions of attitude, it is concerned with reference to behaviour or a tendency to respond in a certain manner. A profound definition of attitude is that of Thurstone (1928) who defined attitude as "the sum total of a man's inclinations and feelings, prejudice or bias, preconceived notions, ideas, fears, threats, and convictions about any specified topic". Further, Allport (1935) defined an attitude as "a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related". In the same way, Campbell (1950) defines attitude as "a syndrome of response consistency with regard to social objects". Moreover, according to Guilford (1954), "an attitude is a personal disposition common to individuals, but possessed in different degrees. This impels them to react to objects, situations, or propositions in ways that can be called favorable or unfavorable".

The central feature of all these definitions of attitude, i.e., attitude is an individual's acquired ways of thinking for or against (or favour of or against) other individuals, objects, ideas or things (Aggarwal, 2007). Therefore, number of scholars considered the fundamental of attitude as cognitive as well as affective elements (positive or negative). Ajzen and Fishbein (1980) explained that although behavioural elements are related to attitudes, but generally it is accepted broadly that they are not parts of attitudes: attitudes are the evaluative responses that explain (in some degree) the behavioural acts. Moreover, in many of the approaches, attitude contentiously deals with some calculated conditions or process which explains the stability of individuals' behaviour in considerations of some object. The term attitude is relational where object is used to include things, people, places, ideas, actions, or situations, either singular or plural. It is clear from the above mentioned definitions that one most vital feature of the attitude is preparation or readiness for the reaction, i.e., (any objects, ideas, individuals, things etc.). Attitude is not actual behaviour, not something that a person does, rather it is a preparation for behaviour, a predisposition to respond in a particular way to the attitude object. Consequently, it is not considered as an actual behaviour but also a precondition of behaviour and plays an important role of intermediary between the psychological process and stimuli from some object and behavioural reaction.

Attitudes are the product of heredity and environment when an individual leans from experiences and others' behaviour. Thus, it is formed by the individuals who acquire them not only through their learning experiences but also through their relations with their reference groups, family members, social and work groups etc (Rix, 2005). In the same line, the reviews indicated that attitude of any individual is related with his/her beliefs, values, emotions, perception etc. In the previous chapter, a number of theories and models have been explained pointed out that individuals' values, beliefs and attitudes have a vital impact in taking decisions on the responses to object and situations and reflect through their conduct behaviour. From the discussion in the previous chapter, it can be inferred that there existed a relationship between the values, beliefs, attitudes, intentions and behaviours of individual. Therefore, on the basis of a good attitude scale of measurement, researchers can predict behaviour. The conception of attitude is implicit in the techniques of attitude measurement (Shaw and Wright, 1967).

MEASUREMENT OF ATTITUDE

In 1928, Thurstone declared that "attitudes can be measured," in the last eight decades, different types of attitude was studied and measured. Attitude is considered as hypothetical concept due to its psychological construct and represents certain underlying response tendencies. But the common practice is to measure attitudes by surveys. Attitude construct has been measured by many different techniques ranging from, Arbitrary approach, Consensus scale approach, Item analysis approach, Cumulative scale approach, Factor analysis approach. Most of the scholars described that although attitudes cannot be measured directly yet their existence must be inferred from their consequences borne out of reactions and responses. In this regard, McGuire (1969) explained attitude as an arbitrate concept in relation to behaviour rather than as a behaviour that is directly observable. Moreover, to understand the people's mental states and mental processes he studied their beliefs and behaviours in terms of measure attitudes.

Attitude tests are the most widely used tests and also the most useful tools of data collection in psychological and educational research. Regarding the necessity of attitude test, Harbeck (1972) pointed out about the necessity of attitude test because it is not otherwise captured, much less in "action words" like the thinking patterns, internalized attitudes, emotions feelings, beliefs and values that we frequently want our students to imbibe…. Most scholars agree that it is neither desirable nor possible to construct grades to classify our students on their accomplishments in the

affective domain." This process may make us wiser but definitely at the cost of making their personalities stunted and affecting learning process.

Moreover, attitude surveys rather all measurements related with attitude tempt researchers test the respondent's emotional feelings, values, and beliefs towards an object. Overall, the main aim is to find out what a respondent's physical behaviour will be towards an object, given a particular stimulus. The logic behind attitude scales is that people are assumed to discriminate systematically in their views by discriminating against the statements on a continuum from positive to negative orientations. Many scholars described that individuals use attitude to give vent to inner feelings or beliefs towards particular phenomenon object.

RELATIONSHIP BETWEEN THE VALUES, BELIEFS, ATTITUDES, INTENTIONS AND BEHAVIOUR

In psychology, numbers of theories and models have explained that individuals' values, beliefs and attitude have a vital impact in taking decisions, and conduct behaviour. Therefore, it becomes important on inference that there is a relationship between the values, beliefs, attitude, intention, and behaviour of individual. It is considered that values components of culture play important role to perform a particular type of behaviour. Mueller (1986) concluded that values are determinant of attitudes. However, he states that there is not a one-to-one relationship between particular attitudes and values. A single attitude can be caused by many values. Moreover, researchers have even assured that values have a causal influence on both attitudes and behaviours. Miller and Brewer (2003) asserted after lot of studies that values are more permanent and bring about fundamental rigidity in behaviour and are resistant to change however beneficiary the change might be and may have a direct or indirect influence on attitudes and behaviours. With the like argument, Lahey (2007) also suggested that the best way to understand people and predict how they will behave in the future in the certain situations, is to find out what their values are and what they strive to attain short-term and long-term.

Many scholars have held similar point of view that beliefs are related to attitudes and beliefs about things affect the way people feel about them and show through behaviour. Ajzen and Fishbein (1975) described that beliefs are helpful in the measurement of attitudes. Beliefs, in turn, are influenced by attitudes which some people try to change when they acquire new knowledge and determine to change. Instead of enquiring of respondents how they feel about an attitudinal object, for attitude measurements, we can ask what people believe in about the object.

Belief statements usually contain an affective component. Mueller (1986) stated that "many attitude measurement techniques are systematic methods of abstracting the affective component of belief statements to affect an attitude score". Although Fishbein and Ajzen (1980) stated that a limited number of beliefs are needed to estimate attitude. Yet to test this relationship, they reported it necessary to match measures of attitudes (toward an act) and the behaviour which has been measured. Going by what has preceded in discussion in this regard, it can be inferred that beliefs are influenced by attitudes. This relationship is also substantiated by Miller and Brewer (2003). Rix (2005) held similar views as those of Miller and Brewer and he adds that strong attitudes and beliefs act as direct forces which affect the perception and behaviour of a person and offer stiff opposition to change. Bergh and Theron (2005) were firm in pointing out that an attitude which is based on beliefs is cognitive component of an attitude and that the cognitive aspects of an attitude make up are related to the individual's values system. Their views is, therefore that values are sacred and cannot be shed away. It is follow from this argument that value system provides a direct or indirect orientation and pushes individuals to action resulting an individual's behaviuor. As a result, values have a good relationship with the individual's attitude, intention and behaviour and these cannot be regarded, these are complex and make for the individual differences.

Predicting behaviour in terms of attitude and behaviour has a long history, from Trusturn (1928) to date. In social sciences research, we always measured behaviour in terms of values, beliefs, attitude and intention. Fishbein and Ajzen (1980) described through their "value expectancy model", the attitude formation postulating that the sum strength of our beliefs and their concurrent and affective evaluation combine to determine attitudes towards performance. The attitude then influences individuals' intentions to perform the act and that intention has a direct influence upon their behaviour. Some models have proposed that attitudes had a more direct influence on behaviour than simply influencing intention and that past behaviour had a major influence on future behaviour. According to Tosi and Mero (2003), beliefs are the thinking component of attitudes because they do not refer to favourable or unfavourable reactions towards an object, but, they only convey a sense of "what is" to the person. Moreover, Ajzen's Theory of Planned Behavior (TPB) intended to predict and explain human behaviour, focused on the individual's beliefs, attitude and intention to perform a given behaviour. That contention was also supported to the research study that there is a relationship between the values, beliefs,

attitudes, intentions and behaviours of individuals. Attitude and intention are both the predictors of individual behaviour.

WHAT ARE THE ATTITUDE SCALES?

Attitude scales are usually used for the measurement of attitude towards any other individuals, objects, ideas or things. These explain what the individual's acquired ways of thinking are for the present construct and that is attitude. Thus attitude scales (also known as opinionnaries) which usually consist of a large number of statements towards objects of attitude, are one such indirect measure (Chanderakandan, *et al.* (2001). A measurement instrument that contains some combined statements related with particular attitude or its sub-dimensions and provides a combine score is called an attitude scale. Anastasi (1976) defined that attitude scales are designed to provide a quantitative measure of the individual's relative position along a uni-dimensional attitude continuum and it yields a total score indicating the direction and intensity of the individual's attitude towards an object or other stimulus category. Thus, one method of assessing the attitudes of an individual concerning a particular concept or object is, by using an attitude scale. Since an attitude scale is a hypothetical or latent variable relatively an immediately observable variable, attitude measurement consists of the assessment of an individual's responses to a set of situations. The set of situations is usually a set of statements (items) about the attitude object, to which the individual responds with a set of specified response categories "agree" and "disagree" (Shaw and Wright, 1967).

MAIN APPROACHES USED TO ATTITUDE MEASUREMENT

It is necessary for a researcher that he must have the knowledge of attitude measurement approaches and techniques, so that he can develop an appropriate scale to conduct his/her study. An attitude measurement approach gives answers to questions like, how do we measure attitudes? What types of scale, method and techniques are used for the measurement of attitude in social science? To measure the different types of attitude for the different types of objects or construct, the psychologist, educationists and sociologists have developed several scale construction techniques. Some of the important approaches along with the corresponding scale developed under each approach to measure attitude are the following:

Table:1

Different Approaches Used for Measuring Attitude of People

Sr. No.	Name of Scale Construction Approach	Name of Scale developed
1.	Arbitrary approach	Arbitrary Scale
2.	Consensus scale approach	Differential scale (such as Thurstone Differential scale
3.	Item analysis approach	Summated scales (such as Likert scale)
4.	Cumulative scale approach	Cumulative scale (such as Guttman's Scalogram)
5.	Factor analysis approach	Factor scale (such as Osgood's Semantic Differential, Multi-dimensional scaling, etc.)

Source: Kothari (2008)

Five approaches mentioned in the table above (Table 1) are arbitrary approach, Consensus scale approach, Item analysis approach, Cumulative scale approach and Factor analysis approach. The knowledge of appropriate approaches is very significant to measuring attitude of people. Therefore, now these approaches will be discussed below.

ARBITRARY SCALE

Arbitrary Scales are developed on adhoc basis and designed largely through the researcher's own subjective selection of items. The researcher first collects a few statements or items which he believes are unambiguous and appropriate to a given topic. Some of these are selected for inclusion in the measuring instrument and then people are asked to check in a list the statements with which they agree. The chief merit of such scales is that they can be developed very easily, quickly and with relatively less expense. They can also be designed to be highly specific and adequate. Because of these benefits, such scales are widely used in practice. At the same time, there are some limitations of these scales. The most important one is that the researcher does not have objective evidence that such scales measure the concepts for which they have been developed. Others have simply to rely on researcher's insight and competence (Kothari, 2008).

DIFFERENTIAL SCALE (OR THURSTONE DIFFERENTIAL SCALE)

Differential scales are associated with the name of L.L. Thurstone. These have been developed using consensus scale approach. Under such approach the selection of items is made by a panel of judges who evaluate the items keeping in view of whether they are relevant to the topic area and unambiguous in implication (Kothari, 2008).

There are conditions, when the method of paired comparison is not well suited to the situation, the reason being that number of statements to be scaled is large probably because subjects do not have the patience to make a large number of comparative judgments. In such a situation, the solution is to scale the statements through the method of equal appearing interval where each subject is required to make only one comparative choice for each statement. Along with the statements, each subject is given 11 cards on which A to K are written. These cards are arranged before the subjects in a manner that A is kept at the extreme left. 'A' indicates the most unfavourable interval and 'K' is kept extreme right and it represents the most favourable interval. The middle category is designated by the letters G to K which represent various degrees of favourableness and the cards lettered from E to A represent various degrees of unfavourableness. A number of statements, usually 20 or more, are gathered that express various points of views towards the situation (Best, 2006).

|A | B|C | D| E | F|G | H | I | J | K|
Unfavourable   Neutral   Favourable

Thurstone and Chave defined only the two extremes and the middle category (of the 11 intervals) on the ground that the undefined between successive cards would represent equal appearing intervals for all the subjects. The subjects are requested to sort the given statements in terms of 11 intervals represented by 11 cards. Ordinarily, there is no limit for sorting. But Thurstone and Chave reported that subjects took 45 minutes in sorting 130 statements into 11 intervals. Thurstone and Chave made the following assumptions in this method:

(i) The intervals into which the statements are sorted or rated are equal.

(ii) The attitude of the subjects does not influence the sorting of the statements into the various intervals.

In the other words, subjects having favourable attitudes and those having unfavorable attitude would do the sorting in a similar manner. Thus the scale values of the statement are independent of the attitude of the judges (Chanderakandan, *et al. (2001).*

SUMMATED SCALES (OR LIKERT'S-TYPE SCALES)

Many scholars attribute the origin of summated rating scales to Rensis Likert (1932) who used this approach to assess attitudes. Hence, summated rating scales are frequently referred to as Likert scales. However, while all Likert scales are usually considered summated rating scales, the reverse is not true. For example, a semantic differential scale is a summated rating scale, but it is not a Likert scale. In the context of this study, the scales are considered both summated rating scales and Likert scales, but will simply be referred to as scales. Scales have the following characteristics:

A scale must contain multiple items, each of which produces responses with a   numerical value that will be summed or averaged to create a single score describing a respondent's location on the underlying trait continuum.

Each item has no "right" or "wrong" answer as does a multiple-choice test.

Each item requires the respondent to respond to a statement or group of words (semantic differentials consisting of pairs of bipolar adjectives as items).

The Likert method of scale construction represents currently the most popular approach to the generation of reliable attitude measurement devices. When compared with either the Thurstone or the Guttman method, Likert's scale construction technique typifies a process that is not only more efficient in terms of resource expenditure but also more effective in developing scales of high reliability. The main steps involved in Likert's method may be summarized as under:-

A large number of multiple–choice type statements usually with five alternatives such as strongly agree, agree, undecided/neutral, disagree, strongly disagree, concerning the object of attitude are collected by the researcher. These statements are administrated to a group of subjects who respond to each item by indicating which of the given alternatives they agree with.

Every responded item is scored with different weights. The weight ranges from 5 to 1. For favourable statements a weight of 5 given to "strongly agree", 4 to agree, 3 to undecided/neutral, 2 to disagree, 1 strongly disagree. For unfavourable statement, the order of weight to be given is reversed so that "strongly disagree" receiving 1 and 2 to disagree, 3 to Undecided/neutral, 4 to agree, 5 strongly agree (Edward, 1957).

After the weight has been given to items, a total score for each subject is found by adding the weights earned by him on each item. Thus his total score is obtained after the weights are summated over all the statements. Since a subject's response to each item may be considered as his rating of own attitude in a 5 point scale and his total score is obtained after all these weights are summated, the method is known as the method of summated ratings. The next step is to array these statements which have a high discrimination power. For this purpose, the researcher may have to select some part of the highest and lowest score, say the top 27% and the bottom 27%. These two extreme groups are used as criterion groups by which to evaluate individual statements. This way the researcher determines which statements consistently correlate with low favourability and which with high favourability. Only those statements that correlate with the total test should be retained in the final instrument and all others must be discarded from the test. Finally, selection of items is done through the procedure of item analysis. Probably, this step of item analysis is the major step, which distinguishes it from Thurstone's method of equal-appearing intervals (Edwards, 1957).

As we have seen, Thurstone's method makes no use of item analysis in final selection of item analysis. There are several methods of item analysis. Edwards (1957) has suggested the setting of the two extreme groups:-high and low, on the basis of total scores and finding out the significance of the differences between the means of two groups by t-test. The value of t will indicate the extent to which a given statement distinguishes between high and low groups. But other methods such as correlation methods may also be used in place of the t-test (Chanderakandan, et al.*2001)*. Edwards (1957) cited that Likert's method, which Bird (1940) has named as the method of summated rating, is a decidedly simpler method as found by researchers than that of Thurstone's equal-appearing intervals method. In addition, Shaw and Wright (1967) had noted that the scale developed by Likert can be constructed to assess certain attitudes. The Likert scale strives for uni-dimensionality, for equality of units, and for a zero point and the interpretation of scores derived from a Likert-type scale is "based upon the distribution of sample scores, as score has meaning only in relation to scores earned by others in the sample". Comparative evaluation can only make distinction.

There are several limitations of Likert-type scale. By the Likert-type scale, we can simply examine whether respondents are more or less favourable in regard to the topic, but we cannot tell how much more or less they are. Oppenheim (1966) has offered the most serious criticism of

Likert scales and that is, the lack of reproducibility in the technical sense. The same total score may be obtained in many different ways. The argument follows that a score has little meaning or that two or more identical scores may have totally different meanings as statements would be responded in different contexts. According to Kothari (2008), "there are no bases for belief that the five positions indicated on the scale are equally spaced, they may not be equal to the interval between "agree" and "neutral/undecided". Fishbein (1975) also asserts the same position saying while it is true that Likert's scales make no pretense at equal appearing intervals, uni-dimensionality of the summated score is assumed with the application of the internal-consistency calculations. Another disadvantage is that the total score of an individual respondent has little clear meaning since given score can be secured by variety of answer patterns. It is unlikely in the absence of real-life qualifying situations to be totally valid (Kothari, 2008). Furthermore, Best and Kahn (1986) pointed out that there remains a possibility that the people may answer according to what they think they should feel rather than how they do feel". Likert's scales have also been criticized as stated by Zimbardo (1977) for lacking a zero or neutral point. Scores in the middle range of Likert's scales change from categories of mildly supportive to mildly negative. Scores in the middle region may imply lukewarm responses, lack of knowledge, or a balance between strong positive and negative attitudes. Oppenheim (1966) asserted that percentile norms or standard deviation norms can be calculated if a sample of sufficient size is available and concluded that Likert's scales yielded a reliable, rough ordering of people pertinent to a particular attitude.

In spite of all these limitations, the Likert's-type summated scales are regarded as the most useful in a situation wherein it is possible to compare the respondent's score with a distribution of scores from some well-defined groups. They are equally useful and concerned with a programme to usher in change or improvement to find with high degree of conviction the desired effects of our efforts. It can as well correlate scores on the scale with other measures without any concern for the absolute value of what is favourable and what is unfavourable. All this accounts for the popularity of Likert's –type scales in social studies relating to measuring attitude (Kothari, 2008).

CUMULATIVE SCALES OR GUTTMAN'S SCALE

The method of cumulative scaling is developed by using Guttman's scale. Guttman's method of scale analysis or scalogram analysis differs considerably from the two methods of attitude scales

construction discussed previously. The Guttman Scale is based upon the methods of cumulative scaling and has been defined by Guttman (1950) himself as -"We shall call a set of items of common content a scale if a person with a higher rank than another person is just high as or higher on every item than the other person"

It states that a scale will mean a set of items of common content subject to the condition that a person with higher rank or score will rank higher than another person on the same set of statements. It is in such condition that Guttman's Scale operates. For example, a person who responds with "yes" to item (a) will also be responding in "yes" term to items (b), (c) and (d). All the four items are measuring the same dimension, that is, height and Guttman (1945) called it uni-dimensional scale". Similarly, if a set of attitude statements measure the same attitude, they are said to constitute a uni-dimensional scale or a Guttman Scale.

According to Guttman, one advantage of the uni-dimensional scale is that from the total score of the person one can reproduce the pattern of his responses to the statements. Suppose, for example, that in the above sample, "yes" is given a weight of 1 and "no" is given a weight of 4, we can say that he has responded "yes" to items a,b,c &d. Likewise, if a person has secured a total weight of 3, he has responded "yes" to item b, c and d "No" to item a. Such prediction regarding the perfect reproducibility is true in a perfect Guttman scale only. In case of attitude, statements showing perfect reproducibility are rarely achieved because some degrees of irrelevancy is always present.

A case of perfect reproducibility has been demonstrated where in responses of 10 subjects towards five items have been displayed. Each item has two responses categories –Agree and Disagree. The response category "Agree" is scored with one the other response category "Disagree" is scored with 0. Subsequently, an attempt is made to evaluate the scalability of the items. If the coefficient of reproducibility is below 0.90, no enumerative scale is said to exist between the values 0.85 to 0.90, a quasi-scale is said to exist. Thus for Guttman, the co-efficient of reproducibility must be at least 0.90 for constituting the cumulative scale.

The major criticism of the Guttman scale is that it ignores the problem of selecting representative items from the initial pool. As a matter of fact, no scientific procedures have been instituted for selection of items. Commenting on the selection of items, Edwards (1957) has assumed, "just how these statements are selected remains something of mystery".

FACTOR SCALES

Factor scales are developed through factor analysis or on the basis of inter-correlation of items which indicates that a common factor accounts for the relationships between items. Kothari (2008) cited Emory, (1976) that factor scales are particularly "useful in uncovering latent attitude dimensions and approach scaling through the concept of multiple-dimension attribute space. More specifically the two problems viz., how to uncover underlying (latent) dimensions which have not been identified, are dealt with through factor scales. An important factor scale based on the factor analysis is Semantic Differential (S.D.) and the other one is Multidimensional Scaling.

(i) Semantic differential scale:- Semantic differential scale or the S.D. scale developed by Charles E. Osgood, G.J. Suci and P.H. Tanenbaum (1957), is an attempt to measure the psychological meanings of an object to an individual. This scale is based on the presumption that an object can have different dimensions: - property space or what can be called the semantic space- in the context of Semantic differential scale. The semantic differential technique is meant for obtaining a person's psychological reactions to certain objects, persons or ideas under study. The term semantic differential means a study of the differences in the psychological meanings of an object etc. It consists of a number of bipolar adjectives each having seven equally spaced scale points. The respondent indicates an attitude or opinion by checking on any one of seven spaces between the two extremes. Scoring of the responses is done by assigning numerical weights of 7 and 1 to the two extremes and 6,5,4,3 and 2, to the spaces in between.

(E)Successful							Unsuccessful
(P)Severe							Lenient
(P)Heavy							Light
(A)Hot							Cold
(E)Progressive							Regressive
(P)Strong							Weak
(A)Active							Passive
(A)Fast							Slow
(E)True							False
(E)Sociable							Unsociable

Source: Kothari(2008)

The numerical weights of +3, +2, +1, 0, -1,-2, and -3 are also used and are more meaningful, through inconvenient for further computation. A person's attitude score obtained by the summing up his scores on individuals score. Semantic profile can then be plotted graphically for comparison of attitude of different groups like elementary school teachers and college teachers, rural students and urban students, males and females, delinquents and normal. Semantic differential scales have been factor analysed and the following three major factors identified:

Table: 2

Semantic differential scale - Example for Factors Used and Bipolar Adjectives

Sr. No	Factors	Bipolar adjectives
1.	Evaluation	Good, Bad, Fair-Unfair, etc.
2.	Activity	Fast, Slow, Active-Inactive, etc.
3.	Potency	Strong, Weak, Hard-Soft, etc.

Source: Aggarwal (2007)

The factor of 'evaluation' is considered as indicative of attitude. Hence, the scales highly loaded on 'evolution factor' and low on other factors are used to measure the attitude of persons. Scales belonging to the other two factors are used as "fillers" to disguise the purpose of the study and are hence not included in the scoring. While drawing up a semantic differential form, care should be taken to select the scales relevant or applicable to the object of the attitude.

Semantic differential form is easy to assemble by picking up the relevant adjectives already factor analysed by Osgood *et. al* (1957). It is a technique with a better disguised purpose. It can give a measure of both the intensity and the direction of the attitude. Its use has been made in a vast array of situations, and subjects (Aggarwal, 2007). The main problem of this method is that it is most difficult to order along a single dimension using a scaleogram procedure.

The Osgood semantic differential was not selected for scale format because the items developed from the literature and research on school culture were best presented in a series of belief statements rather than as a series of bipolar adjectives. Shaw and Wright (1967) concluded "there seems to have been few major advances or breakthroughs in techniques of scale construction since the Thurstone and Likert methods were developed and an overwhelming majority of scales

has been developed by either the Thurstone or the Likert technique". Hence, both the Thurston and Likert methods were considered and compared as attitude scale formats.

(ii)Multidimensional scaling: Two approaches, the metric and the non-metric both, are usually discussed and used in the context of MDS, while attempting to construct a space containing *m* point such that *m(m-1)/2* inter-point distance reflect the input data. The metric approach to MDS treats the input data an interval scale data and solves by applying statistical methods for the additive constant which minimizes the dimensionality of the solution space. This approach utilizes all the dimensionality of the solution. The non-metric approach first gathers the non-metric similarities by asking respondents to rank order all possible pairs that can be obtained from a set of objects. Such non-metric data is then transformed into some arbitrary metric space and then the solution is obtained by reducing the dimensionality (Kothari, 2008).

The significance of MDS lies in the fact that it enables the researcher to study the perceptual structure of a set of stimuli and the cognitive process underlying the development of his structure. Psychologists employ multidimensional scaling techniques in an effort to scale psychophysical stimuli and to determine appropriate labels for the dimensions along which these stimuli show variance (Ferber, 1948). The MDS techniques, in fact do away with the need in the data collection process to specify the attribute(s) along which the several brands and particular product, may be compared as ultimately the MDS analysis itself reveals such attributes that underline the expressed relative similarities among objects. Thus, MDS is an important tool in attitude measurement and the techniques falling under MDS promise in an advance form a series of uni-dimensional measurements (a distribution of intensities of feeling towards single attribute such as colour, taste or a preference ranking with indeterminate intervals), to a perceptual mapping in MDS of objects ….company image, advertisement brands etc" (Giles, 1974, Kothari, 2008).

Next, Kothari (2008) explained that in spite of all the merits stated above, the MDS is not widely used because of the computation complications involved under it. Many of its methods are quite laborious in terms of both the collection of data and the subsequent analyses. However, some progress has been achieved (due to the pioneering efforts' of Green and Carroll) during the few decades in the use of non-matrices MDS in the context of market research problems. The techniques have been specifically applied in "finding out the perceptual dimensions and the

spacing of stimuli (Green & Carroll, 1978). But, in long run, the worth of MDS will be determined by the extent to which it advances the behavioural sciences (Nunnally, 1978).

FINAL WORDS

Many research studies have supported that there is a relationship between the values, beliefs, attitudes, intentions and behaviours of individuals. Attitude scales are usually used for the measurement of attitude towards any other individuals, objects, ideas or things. These explain what the individual's acquired ways of thinking are for the present construct and that is attitude. Tosi, Rizzo and Carrol (1994) pointed out the necessity of understanding people in terms of their attitudes. They stated that general and weak attitudes do not predict behaviour clearly, while specific, strong attitudes that are very important to a people may predict behaviour more specifically. Thus, the knowledge of all of above mentioned approaches and techniques will bend support to the every researcher to make an effective scale for measuring attitude. Although, every type of attitude measurement approaches and techniques are appropriate for the measurement of attitude, yet the choice for considering any approach and technique depends on research feasibility, knowledge, availability of literature and the nature, objective and need of the research study. Ihinger (1988) reported that four common techniques for measuring attitudes are: the method of equal-appearing intervals devised by Thurstone, Likert's method of summated ratings, Guttman's scalogram, and the Semantic Differential of Osgood, Suci, and Tannenbaum. Thurstone's technique for measuring attitudes is based on the respondent's acceptance or rejection of opinion statements. Therefore, at this stage, the researcher needs to select one most appropriate scale format to construct a scale from these.

REFERENCES

1. **Aggarwal, Y. P., (2007).** *The Science of Education Research: A Source Book (2nd ed.).* New Delhi, India. Nice Printer.

2. **Ajzen, I. (1991**). The Theory of Planned Behaviour. *Organisational Behaviour & Human Decision Processes*. 50, 179-211.

3. **Ajzen, I., & Fishbein. M. (1980).** Understanding *Attitudes & Predicting Social Behaviour.* Englewood-Cliffs NJ, USA. Prentice-Hall.

4. **Allport, G., W. (1935).** Attitudes. In C. M. Murchison (Ed.). *Handbook of Social Psychology.* Winchester MA, USA. Clark University Press.

5. **Anastasi, A. (1976).** *Psychological Testing.* New York, USA. MacMillan Publishers.

6. **Anastasi, A. (1988).** *Psychological Testing.* (6th ed.). New York, USA. Macmillan Publishers.

7. **Bergh, Z. C. & Theron, A. L. (2005).** *Psychology: In the Work Context.* Cape Town, South Africa. ABC Press.

8. **Best, John W. & Kahn, James V., (1986).** Research in Education. (2nd ed.). New Delhi, India. Dorling *Kinderslay Pvt. Ltd.*

9. **Best, John W. & Kahn, James V., (2006).** *Research in Education. (5th ed.).*New Delhi, India. Dorling Kinderslay Pvt. Ltd.

10. **Best, John W. & Kahn, James V., (2006).** *Research in Education. (5th ed.).*New Delhi, India. Dorling Kinderslay Pvt. Ltd.

11. **Campbell, D., T. (1950).** The Indirect Assessment of Social Attitudes. *Psychological Bulletin*, 47, 15-38.

12. **Chanderakandan, K., Venkatapirasu, J., Seker, V. & Anad Kumar V., (2001)** *Tests & Measurement in Social Sciences.* New Delhi, India. APH Publication Corporation.

13. **Chandrasekar. K., & Kaliyamoorthy, S.,** (Eds.). **(2007).** *Entrepreneurial Training An Overview. Entrepreneurial Training Theory & Practice.* New Delhi. India. 1-5.

14. **Edwards, L. Allen (1957).** *Techniques of Attitude Scale Construction.* Bombay. India. Vakils, Feffer & Simons Pvt. Ltd.

15. **Emory, C. William (1976).** *Business Research Methods.* Homewood Illinois, USA. Irwin.

16. **Fishbein, M., & Ajzen, I. (1975).** *Belief, Attitude, Intention, & Behaviour: An Introduction to Theory & Research.* Reading. MA, Philippines. Addison-Wesley.

17. **Giles, G. B. (1974).** *Marketing.* (2nd ed.), London: Macdonald & Evans Ltd.

18. **Green, Paul E. & Carroll, J. Douglas (1978).** Analyzing Multivariate Data. Chicago, IL USA. Harcourt School.

19. **Guilford, J. P. (1954).** *Psychometric Methods*. New York, USA. Prentice Hall. McGraw-Hill Book Company.

20. **Guttman, L. (1950).** *The Basis for Scalogram Analysis.* In S. A. Stouffer, L. Guttman, E. A. Suchman, P. F. Lazarsfeld, S. A. Star, & J. A. Clausen (Eds.), Measurement and prediction (pp. 60-90). Princeton NJ, USA. Princeton University Press.

21. **Guttman, Louis (1941)**. The Quantification of a Class of Attributes: A Theory & Method of Scale Construction. In P. Horst et al. (Eds.). *The Prediction of Personal Adjustment.* Social Science Research Council. New York.USA.

22. **Guttman, Louis (1970).** A Basis for Scaling Qualitative Data. In Gene F. Summers (Ed.) *Attitude Measurement.* Chicago IL, USA. Rand McNally & Co., 174-186.

23. **Guttman, Louis L. (1944).** A Basis for Scaling Qualitative Data. *American Sociological Review*, 9, 139-150.

24. **Harbeck, Mary B. (1972).** The Student Will Appreciate Competently. *Education Technology.* Nov, 12 (11) 26-28.

25. **Kothari, C.R. (1993).** Research Methodology . Methods & Techniques. (1st ed.) New Delhi, India. *New Age International (P) Ltd.*

26. **Kothari, C.R. (2008).** *Research Methodology . Methods & Techniques.* (3rd ed.). New Delhi, India. New Age International (P) Ltd.

27. **Lahey, B. B. (2007).** Psychology: An Introduction. (9th ed.) New York: McGraw-Hill. Lotz, New Zealand.

28. **Likert, R. (1974).** *The Method of Constructing an Attitude Scale.* In G. Maranell (Ed.). *Scaling: A Source Book for Behavioural* Scientists (.233-343). Chicago IL, USA. Aldine Publishing.

29. **Likert, R., (1932)**. The Method of Constructing an Attitude Scale. *Archives of Psychology,* 22(140), 44-45.

30. **McGuire, William J. (1969).** The Nature of Attitudes & Attitude Change. In Gardner Lindzey & Elliot Aronson (Eds.) *The Handbook of Social Psychology. Vol. III.* (136-314) Menlo Park, California. USA. Addison-Wesley Publishing Company.

31. **Miller, D., & Friesen, P.H. (1982).** Innovation in Conservative and Entrepreneurial Firms: Two Models of Strategic Momentum. *Strategic Management Journal.* 3(1), 1-25.

32. **Mueller, D. (1986).** *Measuring Social Attitudes: A Handbook for Researchers & Practitioners.* New York, USA. Teachers College Press.

33. **Nunnally, J. C. (1978).** *Psychometric Theory (2nd Ed.),* New York, USA. McGraw-Hill.

34. **Oliver, R. A. C. (1904).** Research in Education, London, United Kingdom. Allen & Unwin.

35. **Oppenheim, A. N., (1966).** *Questionnaire Design and Attitude Measurement*. New York, USA. Basic Books.

36. **Osgood, C. E., Suci, G. J. & Tannenbaum. P., H. (1957).** *The Measurement of Meaning*. Urbana, USA. University of Illinois Press.

37. **Rix, P. (2005).** Marketing: A Practical Approach. (5th ed.). Australia. McGraw-Hill.

38. **Shaw, Marvin E., & Wright. Jack M., (1967).** S*cales for the Measurement of Attitudes.* New York, USA. McGraw-Hill Book Company.

39. **Shaw, Marvin E., & Wright. Jack M., (1967).** S*cales for the Measurement of Attitudes.* New York, USA. McGraw-Hill Book Company.

40. **Thurstone, L. L. (1928)** Attitudes Can Be Measured. *The American Journal of Sociology.* 33, 529-554.

41. **Thurstone, L. L. (1931).** *Scales for the Measurement of Social Attitudes*. Chicago.IL, USA. University of Chicago Press.

42. **Thurstone, L. L., & Chave, E. J. (1929).** *The Measurement of Attitude: A Psychological Method & Some Experiments with a Scale for Measuring Attitude Toward the Church.* Chicago IL, USA. University of Chicago Press,

43. **Thurstone., L. L. (1947).** *Multiple-Factor Analysis*. Chicago IL, USA. University of Chicago Press.

44. **Tosi, H.L., Rizzo, J. R. & Carrol, S.J. (1986).** *Managing Organizational Behavior.* Cambridge, MA, USA. Blackwell Publishers.

45. **Tosi, H.L., Rizzo, J. R. & Carrol, S.J. (1994).** *Managing Organizational Behavior.* Cambridge, MA, USA. Blackwell Publishers.

46. **Zimbardo, P., Ebbesen. E., & Maslach, C. (1977).** *Influencing Attitudes & Changing Behaviour.* Reading MA, USA. Addison Wesley.