CONSTRUCTION OF SCALE TO MEASURE A WRITTEN DOCUMENT BY SEMANTIC DIFFERENTIAL TECHNIQUE

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ABSTRACT

Writing is an important tool for communication. It not only helps in conveying message to the intended reader but also, possess the qualities of permanence, confidence building, reinforcement and qualitative comprehension. In our day to day life, we are effectively utilizing this tool for speedy dissemination of messages. The quality of any written communication has been judged effectively with the help of an appropriate measuring instrument. In this connection, an attempt was made to construct a scale to measure the written document. Semantic differential is a type of a rating scale designed to measure the connotative meaning of objects, events, and concepts or attitudes. It permits the researcher to measure both the direction and the intensity of respondents' attitudes. Hence, the semantic differential technique was used to construct a scale to measure the written document. A total of twenty items were selected in the final scale of a written document.

KEYWORDS: Measurement, Semantic differential technique, Scale, Written document

INTRODUCTION

Writing is a skill that is required in many contexts throughout our life. It is the most important tool in communication. It not only helps in conveying message to the intended reader but also, possess the qualities of permanence, confidence building, reinforcement and qualitative comprehension. In our day to day life, we are effectively utilizing this tool for speedy dissemination of messages. How efficiently an individual writes a document is reflected through the extent of satisfaction received by the end-users in terms of awareness obtained, knowledge gained and extent of comprehension realized about the subject as well as the application of the same in their real life situation. Hence the quality of a written document needs to be prioritized by the individuals.

Ample research was taken up to study different factors contributing for evaluating the quality of a written document. Each factor will have its own importance in attracting the readers to read the document. In general, if readers read any written document, they will make a subjective judgment of the document based on certain criteria as part of their perception. But it may not give an accurate judgment of the quality of document. To have more objective and accurate judgment of a written document an attempt was made to develop a scale by using semantic differential technique. This scale will act as a means for measuring any written statement more accurately, comprehensively and qualitatively.

MATERIAL AND METHODS

The study was carried out during the year 2014-15. Semantic differential is a type of a rating scale designed to measure the connotative meaning of objects, events, and concepts or attitudes. This technique was developed by Osgood *et al.* (1957). It permits the researcher to measure both the direction and the intensity of respondents' attitudes. The purpose of this technique is to measure the various facets of meaning represented by adjectives. Meaning is a very general term and it includes the various reactions of people towards an object. There are three facets of meaning – denotation, connotation and association. The Semantic Differential Scale is a measure of mainly connotative facet of meaning. Connotation indicates the sentiment and feeling of persons about any object. (Arun Kumar Singh, 2009). In this scale the concept is usually rated on the seven point scale having bipolar adjectives at the two extremes.

In the present study "Written Document" is chosen as the concept. As a first step all the items that can fit into the scale of the concept were collected from thorough review of literature, professionals' observations and personal experiences. A total of 20 items were collected and appropriate bipolar adjectives were assigned for all

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the items which are categorized under three kinds of factors viz., Evaluative (E), Potency (P) and Activity (A) which are the major areas of measuring of the concept under Semantic Differential Scale (Osgood and others discovered these three factors). The three factors along with some examples of bipolar adjective pairs are shown below:

S. No.	Factor	Bipolar Adjective Pairs
1	Evaluative (E)	Good -Bad, Fair-Unfair, Clean-Dirty etc…
2	Potency (P)	Strong-Weak, Large-Small, Hard-Soft, Dominant-Submissive etc...
3	Activity (A)	Hot-Cold, Fast-Slow, Active-Passive, Tense-Relaxed etc...

Each factor is a cluster of adjectives and represents three dimensions of meaning along which a concept can be measured. These are technically known as semantic spaces. Of all these factors 'E' factor is the strongest because the pairs of adjectives of this factor have sharp bipolar extremes i.e., all pairs have very clear-cut positive and negative extremes.

Then these items were given to 100 judges and obtained the responses on a four point continuum viz., "Highly relevant, moderately relevant, slightly relevant and less relevant" with the scores 4, 3, 2 and 1 respectively. For each item the maximum possible score for the judgment of present concept by each judge is 80 and the minimum score possible is 20. After getting total score on all items for all judges, they were arranged in descending order. Then 25 percent of the judges with the highest total scores and 25 percent of the judges with the lowest total scores were taken, which are called as high group and low group respectively. These two groups are known as criterion groups. 't' value for each statement was calculated by using mean scores obtained for each item by the judges of high and low group (Sagar Mondal and Ray, 1999). The formula to calculate t value is as follows:

$$t = \frac{\left(\overline{X}_H - \overline{X}_L\right)}{\sqrt{\Sigma\left(X_H - \overline{X}_H\right)^2 + \Sigma\left(X_L - \overline{X}_L\right)^2} / \sqrt{n(n-1)}}$$

where,

$\overline{X}_H$ = mean score on a given statement for the high group

$\overline{X}_L$ = mean score on a given same statement for the low group

here,

$$\Sigma\left(X_H - \overline{X}_H\right)^2 = \Sigma X_{H^2} - \frac{\Sigma\left(X_H\right)^2}{n_H}$$

$$\Sigma\left(X_L - \overline{X}_L\right)^2 = \Sigma X_{L^2} - \frac{\Sigma\left(X_L\right)^2}{n_L}$$

$$\overline{X}_H = \frac{\Sigma X_H}{n_H}$$

$$\overline{X}_L = \frac{\Sigma X_L}{n_L}$$

$$n = n_L = n_H$$

Calculation of t value for evaluating the difference in the mean response to the item by a high and low group: For First Item

Response category	Low Group			
	X	F	fX	fX²
HR	4	20	80	320
MR	3	5	15	45
SR	2	0	0	0
LR	1	0	0	0
		25	95	365
		n_L	ΣX_L	ΣX_L^2

Response category	Low Group			
	X	F	fX	fX²
HR	4	24	96	384
MR	3	1	3	9
SR	2	0	0	0
LR	1	0	0	0
		25	99	393
		n_H	ΣX_H	ΣX_H^2

$$n = 25$$

$$\overline{X}_H = 99/25 = 3.96$$

$$\overline{X}_L = 95/25 = 3.8$$

$$(\overline{X}_H - \overline{X}_L) = 0.16$$

$$\Sigma(X_H - \overline{X}_H)^2 = 393 - \frac{(99)^2}{25} = 0$$

$$\Sigma(X_L - \overline{X}_L)^2 = 365 - \frac{(95)^2}{25} = 0.96$$

$$\Sigma(X_H - \overline{X}_H)^2 + \Sigma(X_L - \overline{X}_L)^2 / n(n-1) = 0.008$$

$$\sqrt{\Sigma(X_H - \overline{X}_H)^2 + \Sigma(X_L - \overline{X}_L)^2 / n(n-1)} = 0.091$$

$$t_1 = 1.759$$

Note: HR- Highly Relevant, MR- Moderately Relevant, SR-Slightly Relevant and LR-Less Relevant.

The 't' values for remaining items were also calculated by following the same procedure. The value of t is a measure of the extent to which a given item differentiates between the high and low groups. As an approximate rule of thumb, we may regard any 't' value equal to or greater than 1.75 as indicating that the average response of the high and low groups to an item differs significantly, provided 25 or more subjects are present in high group and also in the low group. The items were arranged in the rank order according to their 't' values. Then all the 20 items with the largest 't' values were selected for the scale. Reliability of the items was found out using split-half method and also found the validity of the items. (Edwards, 1997). Finally the 20 items along with their bipolar adjectives, 't' values and factors are shown in the Table 1.

Table 1. 't' values and factors of the selected twenty items along with their bipolar adjectives

S. No.	Item	t value	Factor
1	First sentence (Gripping –Boring)	8.049845	E
2	Sentences (Long –Short)	7.457111	P
3	Clear and easy layout (Difficult –Simple)	7.154967	P
4	Avoiding repetition of words/ sentences (More – Less)	7.10969	P
5	Content (Precise –Vague)	7.102996	E
6	Conclusions and recommendations (Relevant – Irrelevant)	6.725382	E
7	Jargon (Used- Not used)	6.295146	E
8	Spelling and punctuation (Correct –Incorrect)	6.195416	E
9	Use of illustrations (Appropriate- Inappropriate)	5.709971	E
10	Content with an exact use of words (Concise- Long-winded)	5.647964	P
11	Elegance (Neat- Messy)	5.259006	E
12	Sequence of information (Logical –Illogical)	4.813084	E
13	Formatting of the content (Proper –Improper)	4.64758	E
14	Paragraphs (Prolonged- Brief)	4.488746	P
15	Use of voice (Active -Passive)	4.451991	A
16	Catchy and stand out title - Forgettable & unnoticeable title	4.328451	E
17	Hand writing (Impressive- Unimpressive)	2.279212	E
18	Highlight the important points (Focused - Not Focused)	2.106966	A
19	Short, concrete, simple & familiar words - Long, indeterminate complex & unfamiliar words	1.792516	P
20	Subject and purpose (Clear- Unclear)	1.759765	E

Table 2. Semantic differential scale to measure attribute of a written document

S. No.	Item	Adjective	Continuum +3	+2	+1	0	-1	-2	-3	Adjective	Factors
1	First sentence	Gripping								Boring	**E**
2	Content	Precise								Vague	**E**
3	Conclusions and recommendations	Relevant								Irrelevant	**E**
4	Jargon	Used								Not used	**E**
5	Spelling & punctuation	Correct								Incorrect	**E**
6	Use of illustrations	Appropriate								Inappropriate	**E**
7	Elegance	Neatness								Messiness	**E**
8	Sequence of information	Logical								Illogical	**E**
9	Formatting of the content	Proper								Improper	**E**
10	Title	Catchy and stand out								Forgettable and unnoticeable	**E**
11	Hand writing	Impressive								Unimpressive	**E**
12	Subject and purpose	Clear								Un clear	**E**
13	Content	Concise								Long-winded	**P**
14	Paragraphs	Brief								Prolonged	**P**
15	Sentences	Short								Long	**P**
16	Layout	Simple								Difficult	**P**
17	Repetition of words/ sentences	Less								More	**P**
18	Short, simple, concrete and familiar words									Long, complex, indeterminate and unfamiliar	**P**
19	Words	Active								Passive	**A**
20	Important points	Focused								Not Focused	**A**

Finally the concept is written on a separate sheet of paper (preferably in the top-middle of the bipolar adjectives) with the same set of scales and the subject is asked to rate the concept as he or she sees them. By assigning a set of integer values, such as +3, +2, +1, 0, –1, –2, –3, to the seven gradations of each bipolar scale, the responses can be quantified under the assumption of equal-appearing intervals. This is shown in the Table 2.

These scale values, in turn, can be averaged across respondents to develop semantic differential profiles. Semantic Differential data can be analyzed for one individual as well as for a group of individuals. The scores on the individual scales are first located and then summed up to find out the mean of the set of scores. (Arun Kumar Singh, 2009).

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