

An Exploratory Study of Scale Validation for Measuring Advertising Effectiveness

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ABSTRACT

The purpose of this research is to construct a scale to assess the efficacy of advertising effectiveness in Indian market. There is a shortage of marketing scales in India and the scales developed in other countries are not necessarily appropriate for use in India. Advertising effectiveness is a strategy by which advertisers gain their stated advertising objectives. This research closely follows the procedure for developing better measure given by Churchill (1979). Psychometrics of the scale is tested with the help of data collected over two rounds of data collection. Drawing on previous literature a seventeen item scale is constructed at pilot study. After checking the various psychometrics of the scale, the scale is reduced to thirteen items for the final study. The analytical tools used are cronbach alpha, item to total correlation and exploratory factor analysis. This scale has the desirable reliability and validity properties. Thus, this scale could be used by the aspiring researchers.

1. Introduction

In today's liberalized and globalized Indian economy, the utmost concern of advertisers is that of making advertising effective. Marketing research companies equips the advertiser with the valuable information and knowledge about the consumer's needs wants, preferences and demand. Ad makers and agencies can use this information to design their advertisement layout. Knowing about advertising effectiveness is very important for the marketers as large sums of money are poured into advertising.

Many authors (Wells et.al, 2003; Assmus et al., 1984; Danaher et al., 2008; Brown et al., 1998; Singh, Cole, 1993 and Houston et al., 1987) describe the various factors for the advertising effectiveness. According to the authors advertising effectiveness to a great extent is dependent on product trial, pictorial and verbal components of an ad, competitors advertising strategies, and length of an ad. According to (Wells et al., 2003) effective ads work on two levels. First, they should satisfy consumer's objectives by engaging them and delivering a relevant message. Second, the ads must achieve the advertiser's objectives. According to the author's strategy, creativity and execution must work in concert for an ad to be truly effective. Authors further elaborate that there are three effectiveness factors. First, advertisers try to get consumers to perceive - at least notice- their ads. Then advertisers hope consumers will either learn something or be persuaded by something in the ads. Finally, advertisers try to get consumers to behave in a certain way ideally, to buy the product in the advertisement.

Authors (Moore, Reardon, 1987) state that it is incorrect to assume that increasing the number of endorsers will automatically enhance the persuasive impact of an advertising appeal. Study indicates that an increase in persuasion occurred only when the ad mentioned strong and meaningful attributes of the product.

According to authors (Vakratsas, Ambler, 1999) the effectiveness of advertising can be evaluated in a space with

effect, cognition, and experience as the three dimensions. Authors (Chunawalla, Sethia, 2009; Wells et.al, 2003) state that advertiser's keen interest lies in measuring advertising effectiveness's, as large sums of money are poured into advertising. According to the authors there are two ways of measuring advertising effectiveness. First is pre - testing evaluation, the evaluation is done prior to the running of ads in the media. Second is post testing, the evaluation is done after the ads have been run in the media. Pre- testing increases the likelihood of preparing most effective ads, by allowing us an opportunity to detect and eliminate weaknesses or flaws. Pre-testing is elaborate, expensive and is more realistic since ads are tested in real life setting. Post testing guides us to future advertising strategy.

Advertisers look for certain responses to see if there advertising objectives are achieved or not. The first advertising effectiveness factor is *Perception*.

2. Perception

According to the authors (Chunawalla, Sethia, 2009; Wells et.al, 2003) "Perception can be defined as a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment". Perception involves the way we view the world around us. It adds meaning to information gathered via the five senses of touch, smell, hearing, vision and taste. Perception is the primary vehicle through which we come to understand our surroundings and ourselves. According to the authors an effective advertising helps in creating effective exposure, attention and awareness. It is also good at providing a reminder to the customer and encouraging repurchase. The first step in perception is exposure. According to authors (Kempf, Smith, 1998; Schiffman and Kanuak, 2009), when consumers are motivated to attend to and remember an advertisement, they will produce cognitions about it during exposure. Authors further elaborate by saying that the thoughts and perception about an advertisement include content, credibility and execution. After ad exposure, consumers form a tentative brand attitude which will be influenced positively by a brand trial. Once the audience

has been exposed to the message, the next step is to get and keep their *attention*, which leads to a state of awareness. Attention means that the mind is engaged, it is focusing on something and the advertisers should trigger something that arouses and catches the attention of the target audience. Once the message is being perceived and has caught the attention of the consumer the next step is the *awareness* of the brand message. Awareness means that the message has made an impression on the consumer, and the consumer can identify the advertiser. After awareness, the next step in the perception process is *interest and relevance*. Interest provides the pulling power of an advertisement; it keeps people tuned into the message. One of the most important drivers of interest is personal relevance. People pay attention to a advertising only if it's relevant to them.

3. Learning

According to authors (Robbins et.al., 2009; Nelson, Quick, 2008; Kotler et.al, 2009; Meenakshi, Kumar, 2009) learning is any relatively permanent change in behaviour that occurs as a result of experience. Learning includes changes in our behaviour arising from experience. According to the behaviorists learning has its basis in classical and operant conditioning. Learning helps guide and direct motivated behavior. According to authors (Wells et.al., 2003 and Solomon, 2004), there are two types of learning that are particularly important to advertising: cognitive learning, which refers to understanding, and classical conditioning, which explains how an association works. Cognitive learning means that most advertisers want people to know something new after they have read, watched, or heard the message. In case of new products, advertisers try to get consumers to understand how to recognize and use the product. Conditioned learning is the process of making connections and linking ideas, called associations is particularly important to how advertising works. Advertisements use associations to try to get consumers to link the product with something they aspire to, respect, value, or appreciate, such as a personality or type of person, a pleasant experience or situation, or a specific lifestyle ads that work effectively, are not only engaging, they also have the locking power- that is, they lock their messages into the mind once they have been learned. Advertisers should know how our memories work, understand how better to anchor their messages in the minds of their target audiences.

4. Persuasion

According to the authors (Mullins, 2005; Aquinas, 2009; Best et.al, 2003 and Robbins et.al., 2009) a persuasive message tries to establish reinforce, or change an attitude, touch an emotion, or anchor a conviction firmly in the potential customer's belief structure. Arguments, the reasons behind a statement or claim, are particularly important in persuasive communication. Argument, in this sense is not disagreement but of line of reasoning, in which one point follows from another leading to a logical conclusion. An ad often focuses on logic and proof when trying to persuade us to buy a product. The persuasion attribute has three aspects. First, *attitudes and opinions*: ad that seeks to persuade attempts either to establish a new opinion where none has existed before, or reinforce an existing opinion or change an opinion. Second, is an *emotion*: influencing attitudes and opinions is not the only

means of persuasion. Emotions persuade, too. How consumers feel about the product, service, brand, or, company, whether they like it may be just as important as what that person knows about it. Third is *involvement*: people can become emotionally involved in a message which is a common persuasion device. Involvement is the intensity of the consumer's engagement with a message, the brand or the medium.

The last key factor which helps in building advertising effectiveness is behaviour.

5. Behaviour

According to the authors Best et.al .(2003) ; Wells et.al. (2003) and Solomon (2004) advertisers hope that their advertising will lead to some behaviour, such as trying, sampling or buying a product, which could lead to increased sales. "Trial" permits a consumer to experience the brand and decide if its worth a purchase or repurchase. Ultimately most marketers strive to get consumers to repurchase their products regularly. The goal is to build strong brand loyalty which is best measured by repeat behaviour.

6. Research Methodology

This section moves on to describe the scope of the study and then the detailed methodology of the pilot study and the final study. This is followed by an in depth account of scale validation of the scale developed in this research.

6.1 Scope of the Study

The salient aspects of the *scope of the study* are given below.

6.2 Geographic study

The study covered the area of Ahmedabad only. Judgement and Convenience guided the choice of geographic scope. Ahmedabad is an upcoming region of national capital and is becoming an education hub.

6.3 Scope of youth

Respondents for this study are 'youth'. Respondents for this study are '*youth*'. It may be pointed out that the importance of the youth market is increasingly being realised. Ramaswamy and Nanakumari (1998), Solomon (2004) and Loudon and Bitta (2006), state that a factor emphasising the market importance of youth group is that this is the time when brand loyalties may be formed that could last well into adulthood. According to the authors, marketers view this age as "consumer - in - training" because brand loyalty often develops during adolescence. A youth who is committed to a brand may continue to purchase it for many years to come such loyalty creates a barrier - to - entry for other brands that were not chosen during these pivotal years. Thus, advertisers sometimes try to "lock - in" consumers so that in the future they will buy their brands more or less automatically. Researcher realized that certain level of comprehension of an advertisement was very essential to answer the questionnaire. So an educated audience was the need of the research.

7. Pilot Study

A pilot study was conducted with the objective of testing the scale on advertising effectiveness, refining the questionnaire, and identifying various problems, which might be faced in the final study.

The *questionnaire* was prepared in English. It was a structured questionnaire. For pilot study data was collected from 34 respondents. Students were selected through judgement sampling. Education institution was selected through judgement *sampling* because of two reasons. First, it was very important to select educated respondents who could understand the concept of advertising effectiveness and second who play a vital role in the decision making of their families. The *analysis* of the pilot study helped the researcher to identify certain unanticipated problems, as many respondents find the seventeen item scale as too long (see appendix 1). Testing of the scale was the main objective of the pilot study. Many items were deleted after checking the various psychometrics of the scale (details can be seen in the section of scale validation) and the scale was reduced to thirteen items for the final study.

8. Final Study

The final study was done after the results were obtained from the pilot study.

A *questionnaire* was prepared in English. It was a structured questionnaire. The advertising effectiveness was sought. There were thirteen questions based on four parameters of perception, learning, persuasion and behaviour. Thus, a seven point, thirteen item scale on advertising effectiveness was administered to the respondent (see appendix 2). Data was *collected* from 140 respondents. Data was collected through *judgement sampling*. A list was made of universities in Ahmedabad. By the help of random number tables, randomly one university was selected. Then by judgment sampling, management department was chosen and data was collected from all the students of that department. All the data was entered in the SPSS package, as per the coding done in the questionnaire and all the reverse coded items were checked before. Various checks like range check and logical checks were also applied on the data. The *analysis* of the study helped the researcher to refine the scale.

Profile of the total Sample for 1st round and 2nd round can be seen in Table 1. It is a sample of youth. The table depicts four demographic variables gender, age, education and income.

Table 1
Profile of Total Sample for 1st Round and 2nd Round

1 st Round			2 nd Round	
Gender	n	P	n	P
Male	20	58.8	88	62.9
Female	14	41.2	52	37.1
Total*	34	100.0	140	100.00
Age(in yrs)	n	P	n	P
20-22	21	67.74	110	78.57

23-25	10	32.26	30	21.43
Total	31	100.0	140	100.00
Mean age	22.10		21.84	
Standard deviation	1.19		1.14	
Education (in yrs)**	n	P	n	P
15-18	30	90.91	133	97.08
19-24	3	9.09	4	2.92
Total	33	100.0	137	100.00
Mean years education	17.03		16.18	
Standard deviation	1.46		1.35	
Income	n	P	n	P
Upto Rs 3,500				
Rs 3,501- Rs7,000			2	1.5
Rs 7,001-Rs 10,500	1	3.0	1	.7
Rs10,501-Rs 14,000	1	3.0	9	6.7
Rs 14,001- Rs 25,000	7	21.2	26	19.3
Rs 25,001- Rs 50,000	12	36.4	44	32.6
0More than Rs 50,000	12	36.4	53	39.3
Total	33	100.0	135	100.00

9. Scale Validation

Many authors (Churchill, 1979; Peter, 1981 and Malhotra 2005) state that a multi-item scale should be evaluated for accuracy and applicability and emphasis should be on developing measures, which have desirable *reliability and validity* properties. According to the authors, the analyst working to develop a measure must follow the approaches used for assessing the reliability, which includes tests - retest reliability, alternative - forms reliability, and internal consistency reliability as well as validity that can be assessed by examining content validity, criterion validity and construct validity.

According to Churchill (1979), the recommended measure of the internal consistency of a set of items is provided by *Coefficient alpha*. Malhotra (2005) state the coefficient alpha is the average of all possible split-half coefficients resulting from different ways of splitting the scale items. This coefficient alpha varies from 0 to 1, and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability. An important property of coefficient alpha is that its value tends to increase with an increase in the number of scale items. According to the authors, if alpha is low, it suggests that some items do not share equally in the common core and should be eliminated.

Singh (1998) explains that correlational techniques have been frequently employed as the measures of the index of item discrimination. In such situations each item is correlated against the internal criterion of the total score, that is, each item is validated against the internal criterion of the total score. This is called *item-total correlation*. When the correlation between the total score and the individual item score is computed as a measure of the discriminative power of the item, it shows how well the item is measuring that function which the test itself is measuring. Item-total score correlation is regarded by most of the experts as the best index of

discrimination. Churchill (1979), states that items which produce a substantial or sudden drop in the item- to-total correlations should be deleted. Malhotra (2005) states that all correlations above .6 are desirable.

Malhotra (2005) explains that the most popular parametric test is the *t-test*, conducted for examining hypotheses about means. It provides inferences for making statements about the means of parent populations. This test was used to test the discriminating ability of the statement. This test is based on the student's *t* statistic. *T* statistic assumes that the variable has a symmetric bell shaped distribution and the mean is known (or assumed to be known) and the population variance is estimated from the sample.

Malhotra (2005) explains that *factor analysis* is a general name denoting a class of procedures primarily used for data reduction and summarization. The exploratory factor analysis was conducted using principal axis factoring method. The key statistics associated with factor analysis are explained briefly. Bartlett's test of sphericity is a test statistics used to examine the hypotheses that the variables are uncorrelated in the population. In other words, the population correlation matrix is an identity matrix. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. High values (between 0.5 and 1.0) indicate factor analysis is appropriate. Values below 0.5 imply that factor analysis may not be appropriate. Factor loadings are simple correlations between the variables and the factors. The percentage of variance is the percentage of the total variance attributed to each factor and the factors

extracted should account for at least 60 percent of the total variance.

The procedure followed by this researcher included the steps and calculations described above .The researcher has constructed the scale on four parameters; perception, learning, persuasion and behaviour.

9.1 Pilot Study Scale Validation of Scale on Advertising Effectiveness

The researcher constructed the scale on advertising effectiveness (See appendix 1). It is a seven point, seventeen item scale. The items of the scale were framed after reading various articles. (Loudon, Bitta, 2009; Wells et.al., 2003; Chunawalla, Sethia,

2009; Kotler et.al, 2009; Meenakshi, Kumar, 2009; Houston et.al., 1987; Kempf, Smith, 1998 and Danaher et.al., 2008).

The sample size in this round of data collection was 34. Profile of the sample has been discussed in table 1 titled - Profile of total sample for pilot study and final study. The scale was administered to each respondent. Thus a total of 34 cases were reported.

Table 2 titled 'Scale Validation of Scale on Advertising Effectiveness - Pilot Study' contains the results obtained on testing the psychometrics of the scale of advertising effectiveness at the pilot study. Table 2 exhibits the results of cronbach alpha , *t* test, item to total correlation and exploratory factor analysis of the items comprising the ' advertising effectiveness' scale.

**Table 2
Validation of Scale of Advertizing Effectiveness**

Coefficient Alpha = .709 items	Mean of Respondents	Mean of Low Scores	Mean of High Scores	P Value	Total Correlation	Factor Loadings
Effective advertizing results..... the product	5.94	5.33	6.63	.021	.651	.588
I only buy.... exposed before	4.21	4.22	3.75	.566	---	---
I preferred to see.... Interesting	5.91	5.56	5.88	.690	---	---
Effective advertizing.... product	6.09	5.33	7.00	.00	.600	.547
Effective informational..... product	5.82	5.22	6.50	.00	.605	.609
Effective advertisement... product	5.59	4.67	6.38	.004	.589	.581
Effective advertisement... new product	6.09	5.67	6.63	.00	.443	.509
Associating.... a product	5.38	4.89	6.13	.025	.452	.464
Effective... time	5.82	4.78	6.63	.00	.524	.604
Effective... product	5.00	4.56	5.75	.00	.496	.518
Effective... emotions	4.21	3.00	5.00	.005	.552	.478
High consumer.... effectiveness	5.09	4.67	5.63	.000	.407	.452
Beliefs..... effective	5.21	4.89	6.00	.072	---	---
Effective advt... trial	4.91	4.56	5.13	.428	---	---
Effective advt... product	4.82	2.89	6.25	.00	.740	.767
Effective advt... brand loyalty	5.53	4.44	6.38	.00	.636	.516
Effective advt does not product	5.79	4.89	6.88	.00	.432	.424

(Note: --- = Items with low factor loading and does not consider for analysis)

All *t*-values were significant at .05 level of significance except, second item namely, I only buy those products to which I am exposed before, third item, I prefer to see only that advertisement where the information is interesting, fourteen

item, beliefs are the major factor for the advertisements to be effective and fifteen item, effective advertisements lead to the trial of the product. Thus, these four items were deleted for subsequent analysis. Rest each statement is able to

discriminate between high scores and low scores. An item to total correlation was conducted. As can be seen from the Table 2 all correlations range between .407-.740.

Then exploratory factor analysis was conducted. Table 2 gives the important results of factor analysis. K.M.O is acceptable; Bartlett test of sphericity is significant. The percentage of variance explained is 54%. The factor loadings range between .424 to .767.

As per the results of the pilot study, scale validation of scale on advertising effectiveness, four items of the scale were deleted. So, a seventeen item scale was reduced to thirteen items. For the final study a thirteen item scale was administered to the respondents.

9.2 Final Study Scale Validation of Scale on Advertising Effectiveness

After collecting data for the final study the psychographics of the scale were tested. The sample size in this round of data collection was 140. The scale was administered to each respondent. Thus, a total of 140 cases were there. Appendix 2 depicts the scale and its item at the final study. Table 3 titled 'Scale Validation of Scale on Advertising Effectiveness - Final Study' contains the results obtained on testing the psychometrics of the scale of advertising effectiveness at the final study. Table 3 exhibits the results of cronbach alpha , t test, item to total correlation and exploratory factor analysis of the items comprising the ' advertising effectiveness' scale.

TABLE 3
Scale Validation of Scale on Advertising effectiveness - Final Study

Coefficient alpha = .739 Items	Mean of all respondents (I) = 141	Mean of low scores No. of cases = 36	Mean of high scores No. of cases = 35	P Value	Item to total correlation	Factor Loadings
1 Effective adv results... product	5.09	5.47	6.71	.000	.507	.428
2 Inffective advertisement... product.	5.99	5.06	6.49	.000	.516	.118
3 Effective adv does not ... product	5.88	5.481	6.89	.000	.473	.540
4 Effective informational... product	5.90	5.31	6.40	.000	.533	.492
5 Effective advertisement... product	5.76	5.08	6.51	.000	.518	.562
6 Effective advertisement... new product	5.08	5.44	6.66	.000	.482	.462
7 Associating ... a product	5.56	4.53	6.11	.000	.496	.484
8 Effective ... of lime	5.75	4.87	6.46	.000	.430	.470
9 Effective ... towards a product	5.27	4.72	6.00	.000	.512	.527
10 Effective adv ... emotions	1.67	3.86	5.49	.000	.532	.492
11 High consumers ... effectiveness	5.15	4.61	5.77	.000	.438	.491
12 Effective adv ... of the product	5.01	4.06	6.09	.000	.533	.492
13 Effective Adv ... brand loyalty	5.44	4.56	6.46	.000	.585	.592

As can be seen from Table 3, coefficient alpha obtained for the scale was .739. T- Test was conducted to find out the discriminating ability of each item of the scale. Table 3, gives for each item the mean of low scores, mean of high scores, mean of all respondents and the significance level. All t-values were significant at .05 level of significance. Thus, each statement is able to discriminate between high scores and low scores. An item to total correlation was conducted. As can be seen from the Table 3 all the correlations range between .430-.598.

Then an exploratory factor analysis was conducted. Table 3 gives the important results of factor analysis. K.M.O is acceptable; Bartlett test of sphericity is significant. The percentage of variance explained is 44%. The factor loadings range between .428 to .592. The analysis shows that the value of coefficient alpha is acceptable, the results of t- test are significant, and all the item-to-total correlation are high. There is an acceptable percentage of variance explained and factor loadings of all items are above .4.

10. Limitations

This research was done in a small part of the country and that too only in the urban area. As respondents were contacted through the educational institutions, this study left out those youth who do not attend any educational institution. As the questionnaire was made in English only all the school and college going students who are not comfortable in English may have faced difficulty while answering the questions. Despite the researcher's best effort; four items of the scale were deleted because it did not fulfill the various criteria of scale validation, at pilot study. The sample size of the data should have been more which could result into better results.

11. Suggestions for Future Research

This research can also be extended to a different sample profile like working women, children or adults and not restricted to management students only. It is recommended that this topic be studied in other parts of country, in rural areas by preparing a questionnaire in Hindi / regional languages. Future research should use confirmatory factor analysis for scale

validation instead of exploratory factor analysis. The future research should try to construct a scale on advertising

effectiveness, including various demographic variables.

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