THE EXPECTANCY-VALUE MODELS: THE CASE OF THE FISHBEIN MODEL

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The concept of attitude has been the focus of an intensive search analysis since the turn of the century. At first the emphasis was directed at the nature of attitude per se. However, with the publication of Thurstone's (1928) classical article, the research effort has switched to quantitative measurement of attitudes through various methodological and statistical techniques. As the number of experimental studies increased, the structural definitions of attitude became more organized. There are two dominant schools of thought in terms of the number of components that define attitude.

The first approach is formally called the cognitive-affective-conative model. In this case, attitude is proposed to be structurally composed of an input component (perceiving, knowing), a processing-developing component (feeling, liking), and an output component (behavior, acting). For example, Head and Shoulders users might perceive that it controls dandruff effectively (cognitive component), develope a preference or liking for it (affective component), then purchase and use it frequently (conative component).

The second approach is formally referred to as the expectancy-value model. In this case, attitude is supposed to compose of beliefs about the attributes of the attitude object. These beliefs are measured in two different ways. First, as the likelihood or the probability that the particular belief is contained or occurs in the attitude object (expectancy); and Secondly, as the evaluation or worth of the particular belief (value). For example, users of Head and Shoulders (attitude object) may feel that this particular shampoo definitely controls dandruff (expectancy) and that dandruff

control is highly desirable (value). Thus they will have positive attitudes toward Head & Shoulders. This model combines and aggregates expectancy and value components with each other across salient beliefs about the attitude object to determine attitude.

The expectancy-value model implicitly makes four assumptions; these assumptions are ~~that~~:

1) Attitude is a unidimensional phenomenon. This assumption seems to be contrary to the theoretical formulation of models that pertain to attitude measurement. For example, many investigators have argued that attitudes are complex entities composed of two (expectancy-value) or three (cognitive-affective-conative) components. Yet, the expectancy-value model, as algebraically formulated combines many orthogonal dimensions into one aggregate dimension, which geometrically, at least, is a complex operation by itself.

2) Attitude is a conglomeration of two components. This assumption, like many other phenomenon in psychology, defines attitude as a complex entity, made up of at least two dimensions. One dimension is the expectancy component, and the other is the value component. However, both expectancy and value components reflect information derived from a common set of beliefs or attributes. Therefore, in real world problems, these two components are not independent of each other and may in fact represent a family of vectors emanating from the same origin. Thus, to look for a significant interaction between two dimensions by algebraic conglemeration may not be very fruitful.

3) Expectancy and value components are multiplicative. This assumption implies that the multiplicative relationship between

the two components is the propor one. If the expectancy and value components are correlated, then the multiplication of the two components will effect the attitude significantly. However, if the two components are truly independent then the multiplication should not have a significant interaction which may supress the relationship with attitude.

4) Expectancy and value components are additive. This assumption implies that attitude is made up of many parts. All the parts are aggregated to make up the whole. In the aggregation process, some parts may complement each other, some parts may cancel each other, but the composite of the parts will be a better predictor of attitude then any one part alone.

Many researchers have attempted to validate these assumptions with various degrees of success (Sheth, 1973; Cohen and Ahtola, 1971; Fishbein, 1963; Rosenberg, 1968). However, the final verdict about the structural appropriateness of the expectancy-value models is not in yet. Several researchers have used this type of model to explain attitude (Rosenberg, 1956, 1960a, 1960b). The model gained extensive prominance in marketing research, especially in consumer behavior investigations (Sheth and Talarzyk, 1972; Bass and Talarzyk, 1969, 1972; Moinpour and MacLachlan, 1971; Cohen and Ahtola, 1971; Sheth, 1972, 1973; Cohen, Fishbein and Ahtola, 1972). However, the works of Fishbein (1963, 1965, 1967a, 1967b) have been most closely associated with the expectancy-value model of attitude measurement.

Fishbein proposed attitude to be an aggregated function of two components; a belief component and the evaluative aspect of the belief component. The model is algebraically formulated

in the following manner:

$$A_o = \sum_{i=1}^{n} B_i a_i$$

where A_o = the attitude toward the object o
B_i = the strength of belief i about the object o
a_i = the evaluative aspect of belief i
n = the number of beliefs

For example, as applied to marketing research problems, the overall attitude toward a brand of hair shampoo is regarded to be a function of the likelihood that a brand possesses certain attributes (dandruff control, cleans hair, etc.) and the affective evaluation of these attributes (dandruff control is desirable, clean hair is good, etc.). It follows that attitude, as estimated by the aggregated product of the evaluative and belief scores on the basis of attributes, would be correlated with a direct measure of affect or favorableness toward the brand.

The purpose of this study is to empirically validate the assumptions implicit in the expectancy-value models. For this purpose, one of the most popular expectancy-value models, Fishbein's attitude model, was employed. For experimental investigation, four hypothesis were formulated:

1. The multiplication of evaluative and belief components will not significantly improve the contribution of these two components toward the prediction of attitude.

2. The addition or aggregation of the evaluative and/or belief components will not significantly improve the prediction of attitude.

3. The evaluative component will not significantly correlate with the attitude.

4. The belief component will significantly correlate with

the attitude.

In order to test these hypotheses, the information from the evaluative and belief components were used to generate twelve possible models. These models and their algebraic formulations are shown in Figure 1.

Figure 1 is placed about here

METHODOLOGY

The product chosen for the purposes of this study was hair shampoo. A prior study indicated that hair shampoo users had low brand loyalty, high ego involvement and had used various different brands of shampoo at one time or another. Attitudinal data was collected for three popular brands of hair shampoo. These were Head and Shoulders, Prell, and Breck. On the basis of a pilot study using 64 randomly picked subjects eight salient attributes were selected. These attributes were lathering, manageable hair, conditioned hair, dandruff control, pleasant smell, nondry scalp, clean hair, and soft hair. The experiment was carried out over 239 Head and Shoulders users, 196 Prell users, and 156 Breck users.

The subjects at first evaluated each attribute on the basis of a 7-point bipolar semantic differential scale. The exact wording of this section of the questionnaire is provided below:

Q. Please, indicate your personal evaluation of the following benefits and attributes which most people use to evaluate the quality of hair shampoo.

Lots of lathering	good	bad
Manageable hair	good	bad
Dandruff control	good	bad
Clean hair	good	bad
Conditioned hair	good	bad
Soft hair	good	bad
Pleasant smell	good	bad
Nondry scalp	good	bad

This question provided information about the evaluative component of the Fishbein model.

The subjects next rated each brand on the basis of each of the eight attributes. The exact wording of this part of the questionnaire is shown below for one brand:

Q. Please check each scale so as to indicate your personal beliefs about Head and Shoulders.

HEAD AND SHOULDERS makes lots of lather	improbable	probable
HEAD AND SHOULDERS leaves hair manageable	improbable	probable
HEAD AND SHOULDERS controls dandruff	improbable	probable
HEAD AND SHOULDERS leaves hair clean	improbable	probable
HEAD AND SHOULDERS conditions hair	improbable	probable
HEAD AND SHOULDERS leaves hair soft	improbable	probable
HEAD AND SHOULDERS smells pleasant	improbable	probable
HEAD AND SHOULDERS leaves scalp nondry	improbable	probable

This question provided data for the belief component of the Fishbein model.

Also, three different measures of the affective state of the subject toward each brand was obtained with the following three questions:

Q. Please indicate the extent to which you think Head and Shoulders is good or bad.

In general, Head and Shoulders is very good _:_:_:_:_:_:_ In general, Head and Shoulders is very bad

Q. Please indicate the extent to which you are favorable or unfavorable towards Head and Shoulders brand hair shampoo.

Most favorable _:_:_:_:_:_:_ most unfavorable

Q. Please indicate the extent to which you like or dislike Head and Shoulders.

In general, I like it very much _:_:_:_:_:_:_ In general, I don't like it at all

The appearance of the questions and the order of the three brands in the questionnaire were randomized in order to reduce response bias.

RESULTS AND DISCUSSION

Table 1 lists the correlations across the three brands for the twelve possible models formulated from the evaluative and belief components of the Fishbein model. Because of the type of models involved, some of the correlations are simple correlations and some are multiple correlations. However, the multiple correlations were corrected for different sample sizes and the degrees of freedom were quite high. Therefore, comparison of simple and multiple correlations were statistically justified.

Table 1 is placed about here

Hypothesis 1: The multiplication of the evaluative and belief components supresses the predictive power of the belief component. This is indicated by the comparison of models 3 and 5, where, non-aggregated evaluative scores together with the belief scores yielded a higher correlation than when they were multiplied together. Same trend is supported by the comparison of models 8 and 9, where, aggregated evaluative scores together with the belief scores resulted in a higher correlation than when they were multiplied together. Also, non-aggregated belief scores, models 2 and 3, or aggregated belief scores, models 7 and 8, gave higher correlations than the Fishbein model, model 12. Thus, giving further evidence to the supressive effect of multiplying by the evaluative component. Tables 2 through 4 list the product moment correlations across the three brands for the three measures of attitude on individual attribute level. Once again, correlations between beliefs and measured attitude scores are higher than when beliefs are multiplied by the evaluative aspect of beliefs. Therefore, statistical evidence is overwhelmingly in favor of accepting Hypothesis 1 that the multiplication of evaluative and belief components will not significantly improve the predictive power of these two components. As a matter of fact, the evidence suggest that the multiplication of evaluative component is detrimental to the predictive power of the belief component. Evaluative and belief components should not be multiplied together and they should be kept as separate entities.

Hypothesis 2: The addition of evaluative and belief scores supresses the predictive power of the belief component. The

comparison of models 3 and 4 indicates that non-aggregated evaluative and belief scores when kept separate produce better correlation than when they are added together. The comparison of models 8 and 9 shows that aggregated evaluative and belief scores when added together produce lower correlation than when kept separate. Furthermore, the aggregation of the evaluative or belief components under any conditions lower the correlations of these components with attitude measures. This is indicated by the comparison of models 1 vs. 6, 2 vs. 7, 3 vs. 8, 4 vs. 9 or 11, and 5 vs. 10 or 12. In each case, the aggregation process has a detrimental effect on the correlations. On the basis of these findings, Hypothesis 2 was accepted. The addition or aggregation of the evaluative and/or belief components do not significantly improve the prediction of attitude. As a matter of fact, the evidence is to the contrary and that the correlations are lower as a result of the addition and/or aggregation process.

Hypothesis 3: The evaluative component alone explains at most 12 percent of the variation. When the information from the evaluative component is aggregated, the predictive power is even further reduced. Even at the individual attribute level, the correlations are very low. This evidence supports the hypothesis that the evaluative component is not a significant correlate of measured attitude.

Hypothesis 4: The information contained in the belief component significantly correlate with attitude. Even though the combination of beliefs with evaluative information either through additive or multiplicative manner reduces the predictive power, the correlations are still significant. Aggregation of

beliefs also lower the correlations. At the individual attribute level, beliefs provide significant correlations to measures of attitude across the three brands.

This empirical investigation has found overwhelming evidence that the assumptions underlying the structural formulation of the expectancy-value models as represented in this study by the Fishbein's model were not to be validable. Fishbein's model assumes attitude to be a function of an evaluative and a belief component. Every statistical evidence found in this study indicates that information contained in the evaluative component does not contribute to the prediction of attitude. As a matter of fact, there is evidence that the presence of evaluative component in any algebraic form supresses the predictive power of the belief component. This is further supported by the many negative correlations found at the individual attribute level between measured attitude and evaluative component. In marketing applications at least, the collection of evaluative information for the attributes seems not to be necessary or desirable. Attitude toward a brand can best be predicted on the basis of information contained in the belief component.

There is also overwhelming evidence found in this study that the belief information should be kept separate entities and not to be aggregated or combined with evaluative component. In marketing applications, this is a desirable finding any way because the relative weight of each belief toward the formation of brand preference or attitude is needed to make proper marketing decisions. This is also true for advertising considerations. Advertising concentrated on those beliefs that have

more influence in the determination of attitude will have a better chance of changing attitude and behavior.

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Table 1

CORRELATIONS BETWEEN MEASURES OF ATTITUDE AND COMPONENTS OF FISHBEIN MODEL

	HEAD AND SHOULDERS	PRELL	BRECK
Good-bad scale:			
1. a_i	.352	.320	.155
2. B_i	.761	.668	.730
3. a_i and B_i	.780	.721	.754
4. $a_i + B_i$	.696	.543	.630
5. $a_i \times B_i$	.712	.588	.657
6. a_i	.013	.050	.063
7. B_i	.703	.634	.685
8. a_i and B_i	.706	.640	.698
9. $a_i + B_i$	.565	.479	.515
10. $a_i \times B_i$	.596	.504	.545
11. $(a_i + B_i)$	.565	.479	.515
12. $(a_i \times B_i)$	.617	.525	.564
Favorable-unfavorable scale:			
1.	.318	.267	.204
2.	.731	.584	.705
3.	.745	.644	.734
4.	.659	.441	.623
5.	.682	.482	.641
6.	.030	.049	.012
7.	.690	.541	.671
8.	.691	.568	.675
9.	.563	.357	.530
10.	.590	.382	.558
11.	.563	.357	.530
12.	.605	.404	.574
Like-dislike scale:			
1.	.307	.312	.202
2.	.701	.649	.684
3.	.717	.699	.709
4.	.636	.524	.580
5.	.661	.568	.603
6.	.003	.001	.024
7.	.648	.596	.645
8.	.652	.611	.651
9.	.512	.425	.503
10.	.542	.451	.533
11.	.512	.425	.503
12.	.560	.475	.550

Table 2

CORRELATIONS BETWEEN GOOD-BAD SCALE

AND COMPONENTS OF FISHBEIN MODEL

	HEAD AND SHOULDERS	PRELL	BRECK
a_i - evaluative component:			
Lots of lathering	.044	.238	-.080
Manageable hair	.025	-.030	-.039
Dandruff control	.225	.093	-.022
Clean hair	.076	.108	-.031
Conditioned hair	-.045	-.133	.033
Soft hair	-.120	-.081	-.007
Pleasant smell	.027	.019	-.046
Nondry scalp	-.101	.061	-.096
B_i - belief component:			
Lots of lathering	.314	.192	.465
Manageable hair	.543	.604	.689
Dandruff control	.526	.405	.445
Clean hair	.579	.323	.531
Conditioned hair	.649	.583	.614
Soft hair	.526	.533	.518
Pleasant smell	.368	.295	.330
Nondry scalp	.337	.311	.310
$a_i + B_i$ component:			
Lots of lathering	.270	.291	.360
Manageable hair	.438	.448	.534
Dandruff control	.551	.347	.306
Clean hair	.530	.311	.417
Conditioned hair	.478	.365	.488
Soft hair	.332	.313	.359
Pleasant hair	.280	.196	.200
Nondry scalp	.184	.257	.115
$a_i \times B_i$ component:			
Lots of lather	.291	.289	.355
Manageable hair	.493	.513	.591
Dandruff control	.553	.380	.375
Clean hair	.539	.312	.429
Conditioned hair	.539	.430	.517
Soft hair	.378	.351	.369
Pleasanr smell	.309	.219	.236
Nondry scalp	.227	.261	.161

Table 3

CORRELATIONS BETWEEN FAVORABLE-UNFAVORABLE SCALE AND COMPONENTS OF FISHBEIN MODEL

	HEAD AND SHOULDERS	PRELL	BRECK
a_i - evaluative component:			
Lots of lathering	-.013	.089	-.076
Manageable hair	.064	-.034	-.017
Dandruff control	.207	.024	-.059
Clean hair	.014	.119	.052
Conditioned hair	.004	-.202	.052
Soft hair	-.044	-.087	.091
Pleasant smell	.066	-.063	-.034
Nondry scalp	-.114	-.022	-.050
B_i - belief component:			
Lots of lathering	.371	.151	.460
Manageable hair	.544	.543	.654
Dandruff control	.508	.327	.439
Clean hair	.523	.249	.555
Conditioned hair	.617	.512	.563
Soft hair	.483	.450	.506
Pleasant smell	.370	.262	.318
Nondry scalp	.343	.269	.332
$a_i + B_i$ component:			
Lots of lathering	.281	.160	.358
Manageable hair	.459	.399	.517
Dandruff control	.526	.250	.280
Clean hair	.452	.258	.479
Conditioned hair	.483	.268	.460
Soft hair	.346	.253	.413
Pleasant smell	.304	.123	.200
Nondry scalp	.180	.171	.161
$a_i \times B_i$ component:			
Lots of lathering	.296	.157	.344
Manageable hair	.506	.447	.563
Dandruff control	.532	.274	.350
Clean hair	.470	.262	.491
Conditioned hair	.534	.330	.486
Soft hair	.373	.288	.423
Pleasant smell	.324	.151	.228
Nondry scalp	.216	.201	.207

Table 4

CORRELATIONS BETWEEN LIKE-DISLIKE SCALE

AND COMPONENTS OF FISHBEIN MODEL

	HEAD AND SHOULDERS	PRELL	BRECK
a_i - evaluative component:			
Lots of lathering	-.007	.114	-.115
Manageable hair	.037	-.005	-.051
Dandruff control	.200	.081	.005
Clean hair	.036	.148	-.017
Conditioned hair	-.039	-.207	.057
Soft hair	-.065	-.066	.063
Pleasant smell	.007	-.017	-.048
Nondry scalp	-.127	.014	-.029
B_i - belief component:			
Lots of lathering	.365	.160	.464
Manageable hair	.501	.578	.641
Dandruff control	.509	.422	.412
Clean hair	.499	.302	.496
Conditioned hair	.580	.574	.550
Soft hair	.441	.488	.476
Pleasant smell	.332	.229	.335
Nondry scalp	.313	.288	.297
$a_i + B_i$ component:			
Lots of lathering	.280	.184	.340
Manageable hair	.411	.442	.489
Dandruff control	.522	.352	.297
Clean hair	.442	.315	.396
Conditioned hair	.428	.313	.453
Soft hair	.300	.292	.375
Pleasant smell	.243	.131	.202
Nondry scalp	.148	.209	.155
$a_i \times B_i$ component:			
Lots of lathering	.298	.187	.338
Manageable hair	.457	.496	.537
Dandruff control	.535	.381	.362
Clean hair	.458	.322	.406
Conditioned hair	.485	.390	.481
Soft hair	.329	.334	.380
Pleasant smell	.273	.157	.249
Nondry scalp	.180	.218	.204