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ESTIMATION OF RELIABILITY AND VALIDITY OF CONSUMER BEHAVIOR MODEL WITH REGARD TO DIRECT SELLING USING PROBABILITY TECHNIQUE

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ABSTRACT. In the present context of challenges and competitions in business through numerous marketing strategies, the concept of "direct selling" also is taking off slowly and progressively penetrating the market everywhere in the world. In India, there are many companies selling their products through 'direct selling'. Amway is one of the premier organizations among them indulging in direct selling of its products. This study is aimed at determining the behavior of Amway Consumer products in terms of eight selected measurements namely, Prompting Factors, Purchase frequency of Amway products, Purchase behavior of Amway Products, Amway Products differentiation, Attitude on Amway products, Opinion about price, Factors Influencing purchase of Amway products and Suggestions for promotion. 500 samples were identified using purposive convenience sampling. The content, construct and other validities were tested and confirmed. The internal reliability of the measurements was also conformed to the parameters fixed for confirmation. All the dimensions were most significantly correlated with each other except a few. Therefore, the measurement model was found to be suitable to administer among consumers for assessing their behavior.

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1. INTRODUCTION

Conventional marketing system, in most of the countries, is gradually fading away giving way to e-commerce due to the uprising technologies and communication system which help consumers get everything at their door steps. Prevalence of e-commerce could be seen everywhere. Amidst all such marketing systems and concepts, the direct selling is also slowly and steadily picking up everywhere, and in India also many products are marketed and sold through direct selling concept. Amway is one of the premier products in India sold through direct selling. There are a large number of studies about wholesale, retail, and other marketing concepts. Very few studies are available about direct selling concept. Particularly there are no studies about the direct selling of Amway Products in India, especially in Madurai District, Tamilnadu. Therefore, the authors got very much interested in understanding the behaviour of consumers of Amway products. The intention of this study further was fueled when the first manufacturing facility for Amway Products in India and second biggest manufacturing facility in Asia worth INR 520 crores, was constructed in Nilakkottai Taluk, Dindigul district, Tamilnadu, India. Being a unique study, the authors constructed their own instrument to measure the behavior of consumers of Amway products and validated the instrument to standardize it to administer among the consumers. Madurai district was taken as the study area and hence the sample was drawn from the consumers of Madurai district.

2. SAMPLING FRAME

For this study, among the Amway consumers, 500 were identified on Amway's health care products. The respondents included consumers from select demographical basis. The population elements in this study are the ones selected as samples and the listing of such population is called as the sample frame. Table 1 illustrates that the division of the respondents (sample population) was in the pattern of 195 consumers, 101 distributors and 204 consumer-cum-distributors.

2.1. **Instrumentation.** In section two few relevant common factors with regard to consumers on buying Amway products was discussed. In section three, the general purchase behaviour under four critical factors was discussed. Section four dealt with the factors on differentiating the products, based on two

TABLE 1. Sample Frame

Sl.No.	Types of Sample	No.of Samples
1	Consumer	195
2	Distributor	101
3	Consumer Cum Distributor	204
	Total	500

TABLE 2. Variables' Frame

Sl.No.	Description of criterions(dependent)	No.of Predictor Variables
1	Demographic factors (excluding name of sample)	9
2	Role of individual in buying process	4
3	Customer Value from Amway	6
4	Prompting Factors	5
5	Purchase frequency of Amway products	6
6	Purchase behaviour of Amway products	9
7	Amway Products differentiation	8
8	Attitude on Amway products	5
9	Opinion about Price	5
10	Factors influencing purchase of Amway products	5
11	Suggestions for promotions	17
	Total	79

critical factors. Section five focused the cost leadership factors and has two critical factors. Section six elicited on focusing factors. Table.2 illustrates the frame work of the questionnaire.

It was ascertained from Table 2 that the questionnaire contains nine profile (Demographic) factors. There were 4 predictors under the head 'role of individuals in buying process', 6 predictors under the head 'customer value from Amway'. The eight dimensions (critical factors) were supported by the predictor variables (given as statements) as given below: 'Prompting factors' with 5

statements, 'purchase frequency of Amway products' with 6 statements, 'purchase behavior' with 9 statements, 'product differentiation' with 8 statements, 'Purchase attitude' with 5 statements, 'pricing' with 5 statements, 'influencing factor with 5 statements and 'suggestions for promotions' with 17 statements.

2.2. **Scoring Procedure (Measurement Scales).** As such, in this study, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy method was applied to measure the adequacy of the sample for extracting the factors. This method is an alternative offered by SPSS. Similarly, the suitability of the sample for each unifactorial determination was carried out using the KMO measure. The individual KMO values for each of the critical factors were estimated and the variation was between 0-1. Kaiser has set the degree of values in terms of accuracy, and by this the KMO measure of 0.9 - 1.0 is marvelous, 0.8 - 09 is meritorious while 0.7 -0.8 is middle level; 0.6 - 0.7 is mediocre, and 0.5 - 06 is pitiable [1, 2]. However, the Bartlett's Test of Sphericity (773.079) and (Approx.Chi-Square of 142.885) with 0.000 significance exhibited satisfactory result to be fit enough for factor analysis [6]. When a specific variable loads high on a single factor and low on other factors in a rotated factor matrix, it is said to be a fair solution [3]. The variables under the ten critical factors were subjected to PC factor analysis. The results have been presented in Table 3:

Table 3: Factor Analysis

Factor/ Statement No. of Variables	Major Factors	Factor Loadings	Reliability Co-efficient	Eigen Value	Percentage Variation	Alpha
Factor I	Marketing Techniques		0.799	17.466	25.3	
68	Bill boards should be kept	0.922				0.889
69	Voice & Visual media to be used	0.915				0.889
74	Exhibits should be made	0.915				0.889
67	Should be listed in directories	0.867				0.887
66	Intense advertisement in all means to be made	0.862				0.887

48	Economical	0.825				0.898
70	Contests & games should be conducted	0.778				0.887
65	Product brochures should distributed	0.766				0.890
71	Gifts should be given along with purchases	0.764				0.891
44	No side effects, health hazards & harm for body	0.752				0.896
52	Health oriented	0.734				0.893
79	Present practice of canvassing office goes to continue	0.703				0.885
53	Price is high	0.685				0.887
55	Discounts are encouraging	0.607				0.895
62	Very much satisfied with price	0.594				0.886
46	Products are available in all sizes	0.580				0.893
41	Quality is high	0.572				0.893
64	Packing should be attractive	0.561				0.892
64	Packing should be attractive	0.561				0.892
19	User	0.545				0.893
Factor II	**Medicinal Values**		0.603	11.967	17.3	
14	Food substitute	0.899				0.890
40	Product variety is more	0.852				0.887
38	To maintain friendship	0.825				0.889
31	Healthy ageing	0.780				0.887
11	Rejuvenate cells	0.702				0.890
12	Supports the whole body system	0.659				0.890
16	Initiator	0.650				0.893
45	Package is good	0.621				0.891
29	Kids range	0.608				0.892
60	Store is conveniently located	0.606				0.892

Factor III	**Product Varieties**		0.608	9.465	13.7	
21	Essential	0.909				0.888
20	Fundamental	0.892				0.890
22	Life style	0.811				0.892
24	Women's range	0.796				0.891
18	Buyer	0.791				0.892
23	Kid's range	0.744				0.893
13	Suitable for any age of people	0.738				0.893
17	Influencer	0.539				0.890
Factor IV	**Purchase Attitude**		0.255	6.174	8.9	
37	Seeing other who maintain their health in good condition	0.927				0.894
39	My family has a tradition using Amway products	0.815				0.890
36	I buy the products because of others' compulsions	0.748				0.890
77	Loyalty programes should be devised	0.727				0.894
35	Trust on the products	0.650				0.893
72	Sample should be provided	0.579				0.894
51	Originality	0.542				0.891
Factor V	**Product Values**		0.302	5.606	8.1	
54	Products offer value	0.912				0.890
58	Expectations can easy be achieved	0.848				0.891
49	To avoid frequent visit to doctor	0.796				0.891
34	I buy products because friends/relatives buy	0.757				0.893
63	Point of purchase displays should be made	0.685				0.890

61	Merchandize sold is of good value for money	0.596				0.889
50	Supports the basic system	0.454				0.890
Factor VI	**Rebate to the products**		0.382	4.780	6.9	
75	Rebate coupons should be issued	0.726				0.893
42	Substitute for medicine	0.650				0.894
47	Returns are accepted	0.610				0.894
25	Healthy ageing	0.527				0.892
Factor VII	**Consumers' Value of the product**		0.723	2.997	4.3	
26	Fundamental	0.849				0.890
27	Essential	0.788				0.893
28	Life style	0.739				0.893
56	Discounts are motivating	0.705				0.894
30	Women's range	0.587				0.890
Factor VIII	**Convenience to Consumers**		0.28722	0.745	4.0	
59	Convenient parking facility	0.783				0.892
73	Displays in fairs and trade shows should be made quite often	0.591				0.888
15	Acute and long time deceases are cured completely	0.552				0.891
Factor IX	**Price**		0.34848	8.484	3.6	
57	List price are uniform	0.778				0.891
Factor X	**Product Packaging**		0.05215	5.789	2.6	
32	Product is packed well	0.863				0.893
33	The trust on the brand	0.570				0.891
Factor XI	**Tie up with other companies for sales**		0.84189	9.241	1.8	

78	Tie up with other companies should be made	0.702				0.890
	Total Percentage Variation				96.7	

Note:KMO Measure of Sampling Adequacy = 0.502; Bartlett's Test of Sphericity (Approximate Chi-Square) = 142.885, Significance = 0.000.

Eleven major factors were extracted from the seventy-nine variables under the ten critical factors. The first major factor "Marketing Techniques" has nineteen variables to support. The factor loadings of the nineteen variables were within 0.5 and 0.9. The reliability coefficients of the factor explained 79.95 percent. The Eigen value of the major factor was 17.46658. The factor explained the critical factor to the extent of 25.3 percent. The second major factor "Medicinal Values" has ten variables to support. The factor loadings of the ten variables were within 0.5 and 0.9. The reliability coefficients of the factor explained 60.34 percent. The Eigen value of the major factor was 11.96700. The factor explained the critical factor to the extent of 17.3 percent.

The third major factor "Product Varieties" has eight variables to support. The factor loadings of the eight variables were within 0.5 and 0.9. The reliability coefficients of the factor explained 60.89 percent. The Eigen value of the major factor was 9.46520. The factor explained the critical factor to the extent of 13.7 percent. The fourth major factor "Purchase Attitude" has seven variables to support. The factor loadings of the seven variables were within 0.5 and 0.9. The reliability coefficients of the factor explained 25.50 percent. The Eigen value of the major factor was 6.17415. The factor explained the critical factor to the extent of 8.9 percent.

The fifth major factor "Product Values" has seven variables to support. The factor loadings of the seven variables were within 0.5 and 0.9. The reliability coefficients of the factor explained 30.26 percent. The Eigen value of the major factor was 5.60635. The factor explained the critical factor to the extent of 8.1 percent. The sixth major factor "Rebate to the Product" has four variables to support. The factor loadings of the four variables were within 0.5 and 0.9. The reliability coefficients of the factor explained 38.21 percent. The Eigen value of the major factor was 4.78076. The factor explained the critical factor to the extent of 6.9 percent. The seventh major factor called "Consumers' Value of the

Product" had five variables with the factor loadings of the five variables being within 0.5 and 0.9. Similarly, the reliability coefficients of the factor showed 72.38 percent while the Eigen value of the major factor was 2.99731. The factor showed the critical factor to the extent of 4.3 percent.

The eighth major factor "Convenience to Consumer" has three variables to support. The factor loadings of the three variables were within 0.5 and 0.9. The reliability coefficients of the factor explained 28.72 percent. The Eigen value of the major factor was 2.74556. The factor explained the critical factor to the extent of 4.0 percent. The ninth major factor "Product Values" has only one variable to support. The factor loadings of the single variable were 0.77866. The reliability coefficients of the factor explained 34.84 percent. The Eigen value of the major factor was 2.48484. The factor explained the critical factor to the extent of 3.6 percent.

The tenth major factor called "Product Packaging" had two variables with the factor loadings of the two variables being 0.86379 and 0.57039 respectively. Similarly, the reliability coefficients of the factor explained 5.21 percent while the Eigen value of the major factor was 1.78915. The factor showed the critical factor to the extent of 2.6 percent. The eleventh major factor "Tie up with other companies for sales" has only one variable to support. The factor loading of the single variable was 0.70218. The reliability coefficients of the factor explained 84.13 percent. The Eigen value of the major factor was 1.24182. The factor explained the critical factor to the extent of 1.8 percent.

The study found the compliance of KMO measure of sampling adequacy and the value of Bartlett's Test of Sphericity with regard to the parameter, thereby confirming the validity of the construct validity of the critical factor.

2.3. **Test of Reliability.** A reliability coefficient such as Cronbach's Alpha can be used to establish the internal consistency and it can be tested as suggested by Nunnally [4], and with the coefficient alpha developed by Cronbach [5]. The best criterion for internal consistency for established scales was fixed as 0.70 Cronbach alpha value [4]. In this study, the Cronbach alpha(reliability coefficients) were calculated for 14 criterions and 161 variables. Table 4 presents the alpha values calculated in this study.

TABLE 4. Scale Reliabilities

Sl.No.	Criterions	No.of Variables	Alpha
1	Profile factors	10	0.8682
2	Prompting factors	5	0.8188
3	Role in Buying Process	4	0.8763
4	Customer Value	6	0.9255
5	Purchase Frequency	6	0.7373
6	Purchase Behaviour	9	0.6658
7	Product Differentiation	8	0.8386
8	Purchase Attitude	5	0.7343
9	Price	5	0.8686
10	Purchase Influencing factors	5	0.8681
11	Suggestions for Promotion	17	0.9190

Based on the alpha of the individual statements being more than 0.8 for Amway products in Madurai district, ten criteria were suggested for measuring the consumer behavior. The study found that the alpha values for nine criteria were found to be more than 0.7 barring the "Helping Factors" criterion. The alpha value of this criterion was 0.6658, which was lesser than the arrived value 0.7, as recommended by Nunnally [6]. Yet, as this value is closer to 0.7, this factor was also considered. Then, the alpha values for five criteria under SERVQUAL model was estimated individually from the scoring under Perception and Expectation. The values of these ten factors were more than 0.8, while the overall alpha values for the criteria and the profile factors was 0.9717. Hence, the reliability of the instrument was confirmed and found to be fit for the task and establishing the internal consistency.

3. CORRELATION STUDY

In order to study the correlation between the eight critical factors, Pearson Product Moment Correlation technique was employed with the global average scores of each of the critical factor. The result has been portrayed in Table 5.

Table 5: Correlation Matrix

Dimensions	Prompting Factor	Purchase Frequency	Purchase Behavior	Product Differentiation	Purchase Attitude	Pricing	Influencing factor	Promotional Factors
Prompting Factor	1.000							
Purchase Frequency	-0.048 (0.284)	1.000						
Purchase Behavior	0.496** (0.000)	0.297** (0.000)	1.000					
Product Differentiations	0.470** (0.000)	0.275** (0.000)	0.252** (0.000)	1.000				
Purchase Attitude	0.410** (0.000)	0.155** (0.000)	0.133** (0.000)	0.711** (0.000)	1.000			
Pricing	0.163** (0.000)	0.144** (0.001)	0.075 (0.093)	-0.225** (0.000)	-0.2741** (0.000)	1.000		
Influencing Factors	0.748** (0.000)	0.006 (0.894)	0.406** (0.000)	0.427** (0.000)	0.2870** (0.000)	0.4801** (0.000)	1.000	
Promotional Factors	0.174** (0.000)	-0.4800** (0.000)	-0.2097** (0.000)	-0.6716** (0.000)	-0.6357** (0.000)	0.1310** (0.003)	-0.1715** (0.000)	1.000

Note: The values within parenthesis denotes the p values.

It was witnessed from Table 5 that Prompting factors have significant correlation with Purchase Behavior (0.4936), Product differentiation (0.4790), Purchase Attitude (0.4140), Pricing (0.1693), Influencing Factors (0.7498), and Promotional Factors (0.1784). Purchase Frequency also having significant correlation with Purchase Behaviour (0.2971), Product Differentiation (0.2754), Purchase Attitude (0.1552), Pricing (0.1448), and Promotional Factors (0.4800). Purchase Behavior significantly correlated with Product Differentiation (0.2523), Purchase Attitude (0.1338), Influencing Factors (0.4065), Promotional Factors (-0.2097). The dimension Product Differentiation also significantly correlated

with Purchase Attitude (0.7112), Pricing (-0.2257), Influencing Factors (0.2870), and Promotional Factors (0.6716). The dimension Purchase Attitude significantly correlated with Pricing (0.2741), Influencing Factors (0.2870), and Promotional Factors (-0.6357). The dimension Pricing significantly correlated with Influencing Factors (0.4801) and Promotional Factors (0.1310). The dimension Influencing Factor is significantly correlated with Promotional Factors (0.1715).

The dimensions, Prompting Factors with Purchase Frequency (-0.0480), Purchase Frequency with Influencing Factors (0.0060), and Purchase Behavior with Pricing (0.0753), were found to be not correlated with each other. High correlations were noticed among, Prompting factors with Influencing Factors (0.7498), Product Differentiation with Purchase Attitude (0.7112) and Promotional Factors (0.6716) and Purchase Attitude with Promotional Factors (0.6357).

4. Conclusion

This assessment model is highly ideal and suitable for analyzing the behavior of any sort of consumers. As it contains standardized and universal methodologies and applications, this model is reliable and dependable. This model is highly recommended for direct selling marketing companies so that they can reestablish their strategies for marketing. This way they can increase the sale volume to incur more income from direct marketing and invite more number of consumers. Further, the products can easily reach remote areas and unknown consumers.

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