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BUYER BEHAVIOR AND PURCHASE INVOLVEMENT OF CONSUMERS TOWARDS NUTRACEUTICAL PRODUCTS

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Abstract:

Nutraceuticals provides health benefits and helps in prevention and healing of diseases. The global nutraceuticals product market is primarily categorized on the basis of functional food, functional beverages and dietary supplements. The global market of nutraceutical is a growing on account of growth in dietary supplement segment. Some of the factors driving nutraceutical market are the increase in disposable income and conscious about one's health. The spending on purchase of healthy and organic foods is on a rise thus giving a boost to the overall nutraceutical market. Some of the factors restraining the market growth are the lack of knowledge about the benefits of nutraceutical products and high prices of nutraceutical products.

Key Words: Nutraceuticals, Supplement Food, Dietary Food & Purchase

Introduction:

According to a new market report published by Transparency Market Research "Nutraceuticals Product Market: Global Market Size, Segment and Country Analysis & Forecasts (2007-2017)", Global Nutraceutical Product market reached $142.1 billion in2011 and is expected to reach $204.8 billion by 2017, growing at a CAGR of 6.3% from 2012 to 2017. Asia Pacific (including Japan) is expected to have the second largest market share in North America by 2017. In 2011, the Functional food and Beverage market reached $93.0 billion, registering a growth rate of 6.0% from 2007 to 2011. North America enjoyed the highest market share for nutraceutical products at $56.4 billion in 2011.

Need for the Study:

A large number of people in India are becoming more health conscious and they are using their buying power to purchase wellness products. Poor eating patterns and long working hours lead to various diseases like diabetes and hypertension. Many researchers have reported that many nutraceuticals contain active ingredients, have profound effect on cell metabolism and have little side effects. People's mind set is changing to a positive one to lookout themselves from ill effects of modern drugs. They are increasingly feeling the need to protect themselves in a protective fashion.

Review of Literature:

- ✓ Urala and Larhteenmaki, (2003) in their article studied about the functional food world market which was estimated to be worth at least 32 billion U.S. dollars in 1999 and it is steadily growing with new functional food products frequently being launched. By 2003, the market for functional foods in Europe and the USA had experienced 15% and 20% growth respectively over the preceding four years (Frewer et al., 2003). The 2004 Market Analysis also reported that functional foods are still growing at a healthy pace, expanding 8.8 per cent in 2003 and functional foods are four percent of the $555 billion U.S. food industry.
- Waladkhani and Clemens, (2003) in their research paper said that the Allium genus of vegetables including garlic, onions, leeks, scallions, chives, and shallots is characterized by a composition that is high in organ sulfur compounds (Waladkhani and Clemens, 2003), whose anti carcinogenic effects have been demonstrated in animals. Other anti carcinogenic chemical families including flavonoids, polyphenols and terpenes are found in various fruits, vegetables and herbs. Various essential oils, particularly oils of lemon, orange, mandarin, caraway and parsley, contain monoterpenes whose anticancer activity has been shown in invitro studies (Pietta, 2003).

Objectives of the Study:

To evaluate buyer behaviour and purchase involvement regarding the consumption of Nutraceutical products.

Methodology:

The study was conducted in Tirupur City of Tamilnadu state in India. The researcher has adopted cluster sampling procedure for the data collection. The entire population was divided into Tirupur South and Tirupur North using Telephone Directory as the source. From each part (cluster) of Tirupur city, using postal zones all possible areas were identified. Among them few areas were selected using Systematic sampling method covering 30 per cent in the North and 70 per cent in the South. From each selected area, the required number of women was selected based on Judgement Sampling or Purposive sampling by using some common criteria like reference groups, subject knowledge, occupational status and their attitude to cooperate for this

study. The prepared questionnaires were distributed among the respondents residing in areas identified for the survey purpose. The respondents were chosen through friends, relatives and using updated telephone directory as a source for identification. Of the 400 respondents contacted because of incompleteness and other survey difficulties, only 363 usable questionnaires were collected.

Analysis and Interpretation:

The statement regarding the buyer behavior and purchase involvement of consumers towards Nutraceutical products were analysed through Factor analysis.

Factor Analysis by principal component is applied on 24 variables of purchasing involvement to reduce them into meaningful predominant factors. Measures of Sample Adequacy (MSA) such as correlation matrix, Barlett's test of sphericity and KMO value (0.877) showed that data were fit for factor analysis. Principal Component Analysis was used for extracting factors and the number of factors to be retained was based on latent root criterion, variance explained. The solution gave eight factors which explained 73.61% of the total variance. The results were obtained through orthogonal rotations with Varimax and all factor loadings greater than 0.50 (ignoring the sign) were retained. The names of the factors, the statement labels and factor loadings are summarized in Table 1.

Table 1: Factor Analysis Results

Factor No.	Factor	Label	Statement	Factor Loading
F1	**Caution**	M1	Before making a purchase decision I evaluate the need for the nutraceutical product in my family	0.661
		M15	It is important to me to be aware of all the alternatives before buying Nutraceutical product.	0.788
		M3	I don't buy Nutraceutical product just like that	0.603
		M24	I am willing to pay a higher price in order to get the best Nutraceutical product.	0.681
		M13	I spent a lot of time and effort making my purchase decision of Nutraceutical products	0.746
F2	**Perceptiveness**	M20	I pay attention to advertisements for Nutraceuticals product	0.772
		M19	I am willing to spend extra time shopping in order to get the cheapest possible price on goods of like / similar quality	0.718
		M18	I decide to buy and wait for offers and discounts	0.788
		M8	Buying a Nutraceutical product at the lowest possible price is important to me	0.609
F3	**Price Cognizance**	M11	I check the prices even for small items	0.760
		M10	I will often evaluate a recent purchase and become annoyed because the product doesn't adequately satisfy my needs.	0.741
		M17	If I were buying Nutraceutical product, it wouldn't make much difference which brand I chose.	0.681
F4	**Frippery**	M14	I view the purchasing of goods and services as an unimportant activity, not relevant to my main concerns in life.	0.665
		M21	Shopping wisely is a rather petty issue compared to thinking about how to make more money	0.728
		M4	I have little or no interest in purchase of Nutraceutical product	0.521
		M16	I am too absorbed in personal matters to worry about than making smart purchases.	0.749
		M2	Usually reading about Nutraceutical products or asking people about them won't really help me to make a purchase decision	0.841
F5	**Hassle-free**	M5	I am not interested in bargaining	0.600
		M6	I am not interested in discount offers	0.806
F6	**Unflappably**	M9	I usually don;t get upset when I find out I could have bought something cheaper than I did	0.765
		M22	I don't like worrying about getting the best deal when I go shopping, I like to spent money as I please	0.528

F7	**Droopiness**	M7	I can't save a lot of money by careful shopping of Nutraceutical product	0.712
		M12	I am not really committed in getting the most value for my money	0.614
F8	**Brand Irrelevance**	M23	I doesn't make much sense to get upset over a purchase decision of Nutraceutical products	0.768

Thus purchasing involvement variable depends upon eight factors namely Caution, Perceptiveness, Price cognizance, Frippery, Hassle-free, Unflappably, Droopiness and Brand Irrelevance. A *caution* consumer is one who explores and evaluates all the alternatives carefully before making Nutraceutical purchase decision. *Perceptiveness* reflects the characteristics of a person who pays attention to advertisements, likes to avail the sales offers and is willing to spend extra time shopping in order to get the lowest possible price for the product. A *price cognizance* consumer gives highest priority to price factor when compared to quality and brand name. *Frippery* means giving least importance to shopping in life. A *hassle free* consumer is one who is neither interested in bargaining nor discount offers. *Unflappably* means a person who does not like to worry about making the best shopping deals and likes to spend money as per his or her wishes. *Droopiness* reflects an indifferent attitude of the consumer towards shopping. *Brand Irrelevance* projects the opinion of a consumer that most brands are the same.

Classification of Respondents based on the Factors of buyer behavior and Purchasing Involvement of Nutraceutical Products:

Factor analysis by Principal Component method reduced the twenty four variables into eight predominant factors for purchasing involvement. At this juncture it is essential to classify respondents based on their perceptions about eight predominant factors. The two-step hierarchical cluster analysis, dendrogram as well as agglomeration schedule were used to underpin the number of clusters in the sample unit. A dendrogram is used to assess the cohesiveness of the clusters formed and provides information about the appropriate number of clusters to keep. Agglomeration schedule displays the cases or clusters at each stage, the distances between the cases or clusters being combined, and the last cluster level at which a case (or variable) joined the cluster. The results of all the three methods justified the presence of three clusters of respondents based on purchasing involvement. K-Means Cluster analysis is exploited in this context to identify the existence of heterogeneous groups of respondents. The following are the results of *K Means Cluster analysis*.

Table 2: Results of K-Means Cluster Analysis. Final Cluster Centers

Final Cluster Centers			
Purchasing Involvement	**Cluster**		
	1	**2**	**3**
Caution	2.40 (I) Strong	1.31 (III) Weak	2.01(II) Moderate
Perceptiveness	2.58 (I) Strong	1.41 (III) Weak	1.98 (II) Moderate
Price Cognizance	2.59 (I) Strong	1.31 (III) Weak	1.97 (II) Moderate
Frippery	2.43 (I) Strong	1.31 (III) Weak	2.03 (II) Weak
Hassle-free	2.41 (I) Strong	1.39 (III) Weak	2.01 (II) Weak
Unflappably	2.60 (I) Strong	1.14 (III) Weak	2.01 (II) Moderate
Droopiness	2.65 (I) Strong	1.22 (III) Weak	1.95 (II) Moderate
Brand Irrelevance	2.68 (I) Strong	1.35 (III) Weak	2.09 (II) Moderate
Average	2.54	1.30	2.00

Note: Mean values: (1-1.75): Weak; (1.76 – 2.15): Moderate; (2.16 – 2.75): Strong

The Final Cluster Centers table shows the mean values for the three clusters that reflect the attributes of each cluster. It is noted from the table that no particular factor is heavily loaded on any particular cluster segment. The rank of the clusters on every factor is given in the table. The description of all three clusters along with the label is as follows.

The first cluster has a high mean value of 2.54. It is ranked first in all factors such as caution, perceptiveness, price cognizance, Frippery, Hassle-free, Unflappably, Droopiness and Brand Irrelevance.

The second cluster has a weak mean value of 1.30 and is ranked third in all the factors such as caution, perceptiveness, price cognizance, Frippery, Hassle-free, Unflappably, Droopiness and Brand Irrelevance.

The third cluster has a moderate mean value of 2.00 and is ranked second in the mean values of all the factors such as caution, perceptiveness, price cognizance, Frippery, Hassle-free, Unflappably, Droopiness and Brand Irrelevance.

Table 3: ANOVA (Analysis of Variance) for the factors of purchasing involvement

ANOVA						
Purchasing Involvement	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
Caution	18.204	2	.166	360	109.976	.000
Perceptiveness	21.662	2	.217	360	99.620	.000
Price Cognizance	25.704	2	.171	360	150.411	.000
Frippery	19.058	2	.141	360	135.194	.000
Hassle-free	15.964	2	.247	360	64.571	.000
Unflappably	32.320	2	.242	360	133.459	.000
Droopiness	31.881	2	.242	360	131.598	.000
Brand Irrelevance	27.069	2	.255	360	106.192	.000

The final cluster centers table shows that the three clusters differ in mean value of all the eight factors. The ANOVA table indicates that the difference exists among the three clusters in the mean values are significantly different. The significant value for all the eight factors is 0.000. This means that all the eight factors have significant contribution on dividing respondents into three segments based on purchasing involvement.

Table 4: Number of Cases in each Cluster

Cluster	1	80.000	22%
	2	49.000	13.5%
	3	234.000	64.5%
Total		363.000	100%

The Number of cases in each cluster table indicates that there are around 80 respondents out of 363 respondents in cluster I with 22 percent, followed by 49 respondents in cluster II with 13.5 per cent and 234 respondents in cluster III with 64.5 per cent. This means that respondents were influenced by first and third cluster groups in purchasing of Nutraceutical products.

Testing Suitability of Segmentation:

The next primary question is whether the identified clusters are genuine and each cluster differs from the other significantly and purchasing involvement plays a role in separating respondents into three segments. For this purpose, reliability of the cluster classification and its stability across the samples has to be verified. Several authors have recommended the use of discriminant analysis for cross validation (Field and Schoenfeidt 1975; Rogers and Linden 1973). Following are the outcomes of discriminant analysis.

Table 5: Tests of equality of group means for the factors of purchasing involvement

Purchasing Involvement	**Wilks' Lambda**	**F**	**df1**	**df2**	**Sig.**
Caution	.606	116.794	2	360	.000
Perceptiveness	.602	119.022	2	360	.000
Price Cognizance	.579	130.874	2	360	.000
Frippery	.474	199.549	2	360	.000
Hassle-free	.748	60.505	2	360	.000
Unflappably	.656	94.198	2	360	.000
Droopiness	.601	119.725	2	360	.000
Brand Irrelevance	.767	54.594	2	360	.000

Table 5 contains Wilks' lambda, the F statistic, its degrees of freedom and significance level. Wilks' lambda is the ratio of the within-groups sum of squares to the total sum of squares. Wilks' lambda in this case ranges from 0.1 to 0.9. The small values of Wilks' lambda indicate that there is a strong group differences among mean values of eight factors. The F statistic is a ratio of between-groups variability to the within-groups variability. The significance value is 0.000 for all the eight factors, which indicates that the group differences are significant. But, the assertion requires a parametric support between clusters and the variables of purchasing involvement. The following tables pave the way for the existence of parametric relationship in the form of canonical correlation coefficients:

Table 6: Eigen values for the discriminant functions of purchasing involvement

Function	**Eigenvalue**	**% of Variance**	**Cumulative %**	**Canonical Correlation**
1	3.233[a]	99.4	99.4	0.874
2	0.018[a]	0.6	100.0	0.135

The Eigen value is the ratio of the between-groups sum of squares to the within-groups sum of squares. The largest Eigen value corresponds to the maximum spread of the groups' means. Small Eigen accounts for very little of the total dispersion.

Two discriminant functions can be formed when there are three clusters. The Eigen value is high for first function which means that there is a high relation between the first function and the eight factors.

The canonical correlation measures the association between two functions and eight factors. The co-efficient of canonical correlation is very high for both the functions. This indicates that there exists high relation between two functions and the eight factors.

The first discriminant function has the highest Eigen value of 3.233 with a large variance of 99.4% along with high canonical coefficient of 0.874.This indicates that the first discriminant function perfectly discriminates the three clusters based on independent variables.

Table 7: Wilks' lambda for the discriminant functions of purchasing involvement

Wilks' Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.232	520.877	16	.000
2	.982	6.510	7	.482

Wilks' lambda for the first function is 0.232 which indicates that the group means are different sin the first function and Wilks' lambda for the second function is 0.982 which indicates that group means are not different. A chi-square transformation of Wilks' lambda is used along with the degrees of freedom to determine the degree of significance. The significance value is small for the first function which is 0.000. It indicates that group means differ very much significantly in the first function. The Chi-square value for the second function is 6.510 which is not significant at 0.000 level. Out of eight factors certain specific factors form the basis of vector space and also cause perfect discrimination which will be identified in the following structure matrix.

Table 8: Structure matrix for the discriminant functions of purchasing involvement

Structure Matrix		
	Function	
	1	2
Frippery	.584*	-.573
Price cognizance	.474*	-.062
Perceptiveness	.452*	.321
Caution	.447*	-.295
Unflappably	.402*	-.020
Hassle-free	.322*	.153
Droopiness	.452	.575*
Brand Irrelevance	.305	-.331*

The structure matrix contains within-group correlations of each predictor variable with the canonical function. This matrix provides another way to study the usefulness of each variable in the discriminant function. For each variable, an asterisk indicates its largest absolute correlation with one of the canonical functions. With each function, these marked variables are then ordered by the size of the correlation. The strongest correlations for Frippery occur with function 1.The variables- Droopiness and Brand Irrelevance have strong correlation with function 2. So the two functions are as follows:

Z1 = 0.584* FripperyandZ2 = 0.575* Droopiness – 0.331* Brand Irrelevance

Conclusion:

Thus the buyer behavior and purchase involvement of consumers towards Nutraceutical products have been grouped into Frippery, Price cognizance, Perceptiveness, Caution, Unflappably, Hassle-free, Droopiness and Brand Irrelevance. Among these clusters, the Frippery and Droopiness clusters have strong correlation in discrimination of variables.

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