

# Chocolate Packaging and Purchase Behaviour: A Cluster Analysis Approach

\* *Suraj Kushe Shekhar*

\*\* *P. T. Raveendran*

## Abstract

Packaging is regarded as an important component of our modern lifestyle, and a significant element of the branding process. Changing consumers' lifestyle and increasing self-service has positioned product package as a tool to stimulate impulse buying and increase sales promotion. Chocolate is a product which is consumed irrespective of age barriers. Today, chocolate is marketed in different ways to different consumer segments and hence, packaging of chocolates is, therefore, critical. This study used a hierarchical cluster analysis approach to organize a group of 240 students into meaning clusters based on a combination of several independent chocolate packaging cues (cluster variables), which maximized the similarity of cases within each cluster while minimizing the dissimilarity between groups that were initially unknown. This was followed by one-way ANOVA to ascertain the significant differences between the groups on the classifying variables. Results reflected that cluster variables ("Price and purchase decision") were of paramount importance in purchase of chocolate bars. Cluster variables "Look for expiry dates," "Colour and purchase decision," and "Shape and purchase decision" were significant across all the three clusters. Variables like "Brand name and purchase decision," "Packaging material and purchase decision," "Picture and purchase decision," and "Size and purchase decision" were significant only for Clusters 1 and 2. "Look for ingredients," "Look for manufacturing unit's address," and "Look for nutritional information" were significant for Clusters (1, 3) and (2, 3). Thus, the study scrutinized the key packaging cues influencing 'student clusters'.

**Keywords:** chocolate, cluster, packaging, product, purchase

Packaging is referred to as the process of designing, evaluating, and production of packages. Packaging is also described as an integrated system of preparing goods for transport, warehousing, logistics, sales, and end use (Soroka, 2002). Pilditch (1961) proposed packs as the 'silent salesman'. About thirty years later, Lewis (1991) extended Pilditch's views, stating good packaging as far more than a salesman, but a flag of recognition and a symbol of values. Keller (1993) suggested packages to be non-product related, but brand related components. But as per Richardson et al. (1994), packages are product related but with extrinsic properties. However, Underwood (2003) argued that packages have intrinsic or extrinsic attributes based on certain features they possess. He explained that they are intrinsic when they are considered as the physical part of the content such as toothpaste tube, and they are extrinsic when the information on the package such as logo/picture is taken into consideration. As per Vazquez, Bruce, and Studd (2003), today, the pack must come alive at the point of purchase in order to represent the salesman.

Package design variables mainly constituted the following types: colour, typography, pictures, shape, size, and material (Sonsino, 1990). Underwood (2003) suggested that consumers associate meaning to the package colours in three different forms namely 'the physiological,' 'the cultural,' and 'the associational'. Sonsino (1990) identified that carefully chosen typography was important for readability. He also opined the significance of the size of the package as an important element when considering the visibility of a package and the information it displayed. Underwood et al. (2001) explained that pictures on packages increased incidental learning and were considered more vivid stimuli than verbal explanations. Sauvage (1996) highlighted the significance of shape as a prominent factor in creating an image about the product and the brand. He also pointed that the material of a package affected consumer thoughts. Silayoi and Speece (2004) explained that quality judgments were largely influenced by product characteristics reflected by packaging, and these played a role in the formation of brand preferences. They added that if the package communicated high quality, consumers regularly considered the product was of high quality. If the package communicated low quality, consumers transferred this 'low quality' perception to the product itself.

Doherty and Tranchell (2007) suggested that the world loves chocolate. They also discussed that nine out of ten

\* *Ph.D. Scholar, Department of Management Studies, Kannur University, Thalassery Campus, Kannur - 670661, Kerala.*

E-mail : surajkushe@gmail.com

\*\* *Professor, Department of Management Studies, Kannur University, Thalassery Campus, Kannur - 670661, Kerala.*

E-mail : ravindranpt@gmail.com

people liked chocolates and the tenth person always lied. They even added that chocolate could make everyone smile, even bankers. Giri and Sharma (2012) explained the influence of food product packaging elements affecting consumer buying behaviour. They mentioned that information labels on packs, outlook of the pack, and price are the key features of a pack that a consumer keeps in mind before going for purchase of packed foods. Patwardhan et al. (2010) suggested that of out of the many secondary factors affecting consumer's buying habits of chocolates, packaging was found to be equally important. Harnath and Subrahmanyam (2005) found out that the size of the pouch pack for purchasing toffees/candies were not affected by consumers' monthly income and family size. Consumers had different preferences for different purchasing patterns. Packaging in the chocolate industry is thus critical, especially when targeted at young consumers. Today, packages are designed to suit different occasions, demand to different social classes, and differentiate between different brands. Based on the results from relevant previous research studies, this paper makes an attempt to identify the influence of chocolate packaging cues on young consumers using the hierarchical cluster analysis approach.

## **Literature Review**

Packaging plays a prominent role in marketing of any product. It is central in the process of communicating the marketing objective of a specific product to the consumer. To carry out its function, packaging must be attractive, informative, and correctly identify the product and communicate its real benefits (Meyer & Herbert ,1981; Stem, 1981). Nancarrow, Wright, and Brace (1998) suggested that when only a little minority of brands were high enough to justify the investment that advertising required, for the rest, product packaging represented one of the most significant impetuses for delivering the brand message directly to the prospective consumers. Silayoi and Speece (2007) mentioned that when a consumer was in doubt, the product package becomes important in the purchase option because of its ability to communicate to consumers at the point of sales. Lo" fgren (2008) came up with a metaphor 'the first moment of truth' where in, the product package functioned as a 'silent salesman'. Underwood et al. (2001) explained that visual elements on product packages could be a deliberate method of differentiation as pictures were established as more effective stimuli than words. They also added that consumers processed visual information more rapidly and easily, particularly in low involvement situation. Rigaux - Bricmont (1982) investigated the combined effects of brand names and brand packaging on consumers' perceptions of quality. It was concluded that both extrinsic attributes (brand names and brand packaging) affected the consumers' quality evaluation, not only independently but also interactively. Wansink (1996) identified circumstances in which larger package sizes facilitated greater use than smaller package sizes. He found out that consumers encouraged large packages of familiar, branded products than small packages. He also found out that package size affected usage volume only when accompanied with decrease in the product's unit cost. When increases in package size were not accompanied with decreases in perceived unit costs, this relationship was not found. Schoormans and Robben (1997) explained that the more a package redesign deviated from the existing package design in a product category, the more product attention was induced. Mccracken and Mackln (1998) explained that the visuals associated with a brand name enhanced the memory for the brand.

Rettie and Brewer (2000) confirmed the asymmetry of perception of elements of packaging by showing that to maximize recall, words should be on the right-hand sides of packs, and pictures should be on the left. Calclch and Blair (2001) suggested that when disembedding skill correlated with acquisition time, there were considerable differences among consumers in the duration of time needed to acquire package information. Kozup et al. (2003) pointed out that when favorable nutrition information or health claims were presented on product packages, consumers had more favorable attitudes towards the product, nutrition attitudes, and purchase intentions. Silayoi and Speece (2004) in their experiment on time pressure and involvement level on purchase decisions of packed foods found out that visual elements positively influenced purchase decisions more in the low involvement situation, while informational elements played an important role in higher involvement decision-making. Time pressure changed on how consumers evaluated products at the point of purchase, partly by reducing the ability to give attention to informational elements. Ampuero and Vila (2006) discussed packaging designs and positioning perceptions in the minds of the consumers. They explained that each positioning strategy appeared to be associated with precise graphical variables on product packages. Raghbir and Greenleaf (2006) carried out experiments on package size. They found out that the ratio of the sides of a rectangular product or package could positively persuade purchase intentions. Clement (2007) explained the significance of human behaviour model to describe the in-store purchase behaviour and demonstrated through an eye-

track experiment on how visual impact from packaging design influenced buying behaviour. His experiment also showed an extended decision-making process, where visual attention at the point of sale was an important factor for the post-purchase phase. Silayoi and Speece (2007) in their study indicated that packaging technology which gave a message of convenience and ease of use played the most important role in consumer likelihood to buy. Thomas (2007) argued that an optimal package could create positive momentum for a brand. He further added that beginning of any high-quality package design must start at the pre-package design phase and must travel through several stages/hands before the pack is commercialized.

Wang and Chen (2009) discussed that having illustrations in the package design was one of the prominent factors which influenced buying emotion. They found out that food packaging illustrations using high sharp expression was the most popular, and rendering graphic was the most common. Wakefield et al. (2008) investigated on how an increase in plainer structure of cigarette packaging influenced adult smokers' perceptions about brand image. Results exposed that plain packaging policies that removed most brand design elements were likely to be most successful in removing cigarette brand image associations. Estiri et al. (2010) analyzed the effects of packaging elements on consumer behaviour in three stages: pre-purchase, purchase, and post purchase. They found out that the informational elements of food packaging were considered as the most important product selection criteria, while visual element of packaging attracted the least attention in all the three stages of purchase decisions. Wang and Chou (2010) summarized that consumers comprehended the messages of packaging via more than two visual elements. Typography along with illustration was the best mode for consumers to comprehend products. Design elements such as brand name, product name, product image, package shape, and color association all contributed to the comprehension of products; while attached product information design, structure design, and volume design did not make such a contribution. Becker et al. (2011) examined the influence of packaging design on taste impressions. Results portrayed that visual design parameters such as packaging color and packaging shape inspired potency perceptions. It was also found that angular product shapes inspired intense taste sensations. Patil and Vedak (2011) mentioned that branding, packaging, pricing, and overall positioning of private labels is a challenge for retailers. Chun-Chin et al. (2011) found out the perceptions regarding copywriting of packaging design of snacks when Chinese travelers purchased souvenirs in Taiwan. Findings projected that the most dominant factor of attracting customer's attention were the copywriting of the packaging. Venter et al. (2011) indicated that participants mainly perceived food packaging based on its functional and physical attributes through unprompted awareness. In this context, information attributes of packaging were considered as crucial, as participants considered certain information as being important either for their health or for deciding whether to choose the product.

An attractive packaging for the chocolates forces consumers to buy the chocolates. Even though a few may not approve it psychologically, good packaging undoubtedly improves the mental image of the product. Packaging tends to increase the value and worth of the chocolate and can even reflect the quality of the contents inside the package (Giyahi, 2012). A study conducted by Vreeland (2000) indicated that chocolate prices influenced consumer behaviour. Demetris and Claudio (2001) reported a study related to Cadbury Dairy Milk; which revealed that 'chocolate ingredients' and 'chocolate cost' were among the major consideration factors for consumers before buying chocolate. The present study explored different chocolate packaging cues that could possibly influence the purchase decision of young consumers using hierarchical cluster analysis. Chocolate bars were only included in the study. Assorted chocolates, candies, and gums were excluded.

## **Research Methodology**

The students were asked to visualize that a new chocolate bar has been launched in the market and they were yet to sight it or taste it or they were asked to visualize a chocolate bar which had already been launched in the market and they were yet to sight it or taste it. The present study identified different chocolate packaging cues that could possibly influence the purchase decision of students in such a scenario. A multiple cross sectional descriptive type of research (Malhotra, 2006) was designed for the study. The study identified the perception of three different groups of chocolate consumers' namely :

- i) secondary/higher secondary students ;
- ii) graduates ; and
- iii) postgraduates towards chocolate packaging.

The respondents fell in age group between 11-27 years. Convenient sampling was used as the sampling technique and a total of 240 responses were collected. Primary data was used in the study, and a survey method of data collection technique was undertaken. Data collection was carried out in two schools and four colleges in Kannur district of Kerala. The period of the study was during June-August 2012. A structured pre-tested questionnaire was used as the data collection instrument. Pretesting of the questionnaire was done among a small group of students from a college to modify/eliminate inconsistency and lack of clarity in certain questions. Data obtained through the questionnaires were analyzed using SPSS software package (Version 12) in 95 percent confidence interval.

Cluster analysis is the task of assigning a set of objects into groups (called clusters) so that the objects in the same cluster are more similar (in some sense or another) to each other than to those in other clusters. The present study identified homogeneous group of student chocolate buyers. Then, the buying behaviour of each group was examined separately, where respondents were clustered on the basis of self-reported importance attached to each factor (packaging cues/cluster variable) of the choice criteria utilized in selecting a chocolate package. This was followed by one way ANOVA for final interpretation.

## Results and Discussion

Cronbach's alpha coefficient, which is widely used to test the reliability, was obtained as 0.781. Hence, it was concluded that the variables enjoyed an acceptable reliability level (Malhotra, 2004). Hierarchical cluster analyses on 240 cases were performed using Ward's method with squared Euclidean distance as its distance measure. An eye balling of the agglomeration schedule and the dendrogram indicated that after three clusters, the succeeding cluster added very less to distinguish between cases. Hence, a three cluster solution was found appropriate. The clusters along with their cluster membership are shown in the Table 1.

Table 1: Clusters and Cluster Membership	
Clusters	Cluster membership
1	55
2	115
3	70
<b>Total</b>	<b>240</b>

Source: Primary data

115 respondents were identified in Cluster 2, making it as the largest cluster. Seventy seven respondents were females in this cluster. Forty two respondents were graduates, and 40 respondents were post graduates in this cluster. Cluster 3 was characterized as the second largest with 39 respondents as males and 21 respondents each falling in the higher secondary and graduate categories. Cluster 1 was recognized as the smallest cluster with 28 males and 20 respondents falling in the postgraduate category. Descriptive statistics revealed that there were some major differences between the means of various clusters for each cluster variable. To ascertain the influence of different packaging cues (cluster variables) on these three clusters, a one way ANOVA was performed, as shown in the Table 2. The Table 2 indicates that the results were significant at 95% confidence interval for all cluster variables except price. To ascertain the significant differences, post hoc Tukey HSD multiple comparisons were performed, and it yielded the following results, as shown in the Table 3.

The Table 3 shows that "Look for expiry dates" clearly differentiated the three clusters through their cluster means. "Look for ingredients" significantly differentiated between Clusters (1, 3) and (2, 3). Clusters 1 and 2 were not significantly different with respect to this variable. "Look for manufacturing unit's address" significantly differentiated between the Clusters (1, 3) and (2, 3). Clusters 1 and 2 were not significantly different with respect to this variable. "Look for nutritional information" significantly differentiated between the Clusters (1, 3) and (2, 3). Clusters 1 and 2 were not significantly different with respect to this variable. "Colour and purchase decision" and "Shape and purchase decision" clearly differentiated the three clusters through their cluster means. "Brand name and purchase decision" and "Packaging material and purchase decision" were significant only for Clusters 1 and 2. "Picture and purchase decision" and "Size and purchase decision" were also significant for Clusters 1 and 2. The findings suggest that chocolate

**Table 2: ANOVA**

Variables	Calculations	Sum of Squares	df	Mean Square	F	Sig.
Look for expiry dates	Between Groups	302.961	2	151.480	292.140	.000
	Within Groups	122.889	237	.519		
	<b>Total</b>	<b>425.850</b>	<b>239</b>			
Look for ingredients	Between Groups	18.394	2	9.197	7.308	.001
	Within Groups	298.256	237	1.258		
	<b>Total</b>	<b>316.650</b>	<b>239</b>			
Look for manufacturing unit's address	Between Groups	39.658	2	19.829	18.034	.000
	Within Groups	260.592	237	1.100		
	<b>Total</b>	<b>300.250</b>	<b>239</b>			
Look for nutritional information	Between Groups	23.682	2	11.841	7.984	.000
	Within Groups	351.501	237	1.483		
	<b>Total</b>	<b>375.183</b>	<b>239</b>			
Colour and purchase decision	Between Groups	71.286	2	35.643	35.093	.000
	Within Groups	240.714	237	1.016		
	<b>Total</b>	<b>312.000</b>	<b>239</b>			
Shape and purchase decision	Between Groups	153.582	2	76.791	85.383	.000
	Within Groups	213.151	237	.899		
	<b>Total</b>	<b>366.733</b>	<b>239</b>			
Brand name and purchase decision	Between Groups	5.026	2	2.513	3.082	.048
	Within Groups	193.224	237	.815		
	<b>Total</b>	<b>198.250</b>	<b>239</b>			
Packaging material and purchase decision	Between Groups	8.861	2	4.431	4.027	.019
	Within Groups	260.739	237	1.100		
	<b>Total</b>	<b>269.600</b>	<b>239</b>			
Picture and purchase decision	Between Groups	15.035	2	7.517	6.661	.002
	Within Groups	267.461	237	1.129		
	<b>Total</b>	<b>282.496</b>	<b>239</b>			
Price and purchase decision	Between Groups	.299	2	.150	.143	.867
	Within Groups	248.163	237	1.047		
	<b>Total</b>	<b>248.462</b>	<b>239</b>			
Size and purchase decision	Between Groups	9.481	2	4.740	4.200	.016
	Within Groups	267.515	237	1.129		
	<b>Total</b>	<b>276.996</b>	<b>239</b>			

Source: Primary data

packaging was of paramount importance with respect to most of the 'cluster variables' or 'packaging cues' as far as purchase decisions of students were concerned, with the only exception of cluster variable named "price and purchase decision". This was in contradiction to the findings of Vreeland (2000), wherein he found out that chocolate prices influenced the purchase decision of the consumers.

## Conclusion

The study revealed that chocolate packaging cues largely influenced all the three clusters.

❖ **Cluster 1:** This cluster comprised of 51% male respondents with over 36% school children (secondary /higher secondary) and over 33% postgraduates.

**Table 3: Tukey HSD Multiple Comparisons**

Dependent Variable	(I) Ward	(J) Ward	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
	Method	Method				Lower Bound	Upper Bound
Look for expiry dates	1	2	.60791(*)	.11805	.000	.3295	.8863
		3	-2.00390(*)	.12975	.000	-2.3099	-1.6979
		2	-.60791(*)	.11805	.000	-.8863	-.3295
		3	-2.61180(*)	.10916	.000	-2.8693	-2.3543
		3	2.00390(*)	.12975	.000	1.6979	2.3099
	2	1	2.61180(*)	.10916	.000	2.3543	2.8693
		2	.63913(*)	.17006	.001	-1.0402	-.2380
		3	.51818(*)	.20214	.029	.0414	.9949
		3	.63913(*)	.17006	.001	.2380	1.0402
		2	.27431	.17191	.250	-.1311	.6798
Look for ingredients	1	2	-.67662(*)	.18894	.001	-1.1223	-.2310
		3	-.27431	.17191	.250	-.6798	.1311
		2	-.63918(*)	.10916	.000	-2.8693	-2.3543
		3	.67662(*)	.18894	.001	.2310	1.1223
		2	.95093(*)	.15896	.000	.5760	1.3258
	2	1	-.11383	.19966	.836	-.5847	.3571
		3	-.76104(*)	.21944	.002	-1.2786	-.2435
		1	.11383	.19966	.836	-.3571	.5847
		3	-.64720(*)	.18462	.002	-1.0826	-.2118
		1	.76104(*)	.21944	.002	.2435	1.2786
Look for nutritional information	3	2	.64720(*)	.18462	.002	.2118	1.0826
		2	1.38419(*)	.16522	.000	.9945	1.7739
		3	.93636(*)	.18159	.000	.5081	1.3647
		2	-1.38419(*)	.16522	.000	-1.7739	-.9945
		3	-.44783(*)	.15278	.010	-.8082	-.0875
	3	1	-.93636(*)	.18159	.000	-1.3647	-.5081
		2	.44783(*)	.15278	.010	.0875	.8082
		1	2.01502(*)	.15548	.000	1.6483	2.3817
		3	1.58831(*)	.17088	.000	1.1853	1.9913
		2	-1.38419(*)	.16522	.000	-1.7739	-.9945
Shape and purchase decision	2	1	-.44783(*)	.15278	.010	-.8082	-.0875
		3	-.93636(*)	.18159	.000	-1.3647	-.5081
		2	.44783(*)	.15278	.010	.0875	.8082
		1	2.01502(*)	.15548	.000	1.6483	2.3817
		3	1.58831(*)	.17088	.000	1.1853	1.9913
	3	1	-.138419(*)	.16522	.000	-1.7739	-.9945
		3	-.44783(*)	.15278	.010	-.8082	-.0875
		1	-.93636(*)	.18159	.000	-1.3647	-.5081
		2	.44783(*)	.15278	.010	.0875	.8082
		2	.34229(*)	.14803	.050	-.0068	.6914
Brand name and purchase decision	1	2	.11558	.16270	.758	-.2681	.4993
		3	-.34229(*)	.14803	.050	-.6914	.0068
		3	-.22671	.13688	.224	-.5495	.0961

	3	1	-.11558	.16270	.758	-.4993	.2681
		2	.22671	.13688	.224	-.0961	.5495
Packaging material and purchase decision	1	2	.483004(*)	.171958	.015	.07743	.88857
		3	.266234	.188996	.338	-.17952	.71199
	2	1	-.483004(*)	.171958	.015	-.88857	-.07743
		3	-.216770	.159007	.362	-.59179	.15825
	3	1	-.266234	.188996	.338	-.71199	.17952
		2	.216770	.159007	.362	-.15825	.59179
Picture and purchase decision	1	2	.63478(*)	.17416	.001	.2240	1.0455
		3	.40000	.19142	.094	-.0515	.8515
	2	1	-.63478(*)	.17416	.001	-1.0455	-.2240
		3	-.23478	.16104	.313	-.6146	.1450
	3	1	-.40000	.19142	.094	-.8515	.0515
		2	.23478	.16104	.313	-.1450	.6146
Price and purchase decision	1	2	.08379	.16776	.872	-.3119	.4795
		3	.08442	.18438	.891	-.3505	.5193
	2	1	-.08379	.16776	.872	-.4795	.3119
		3	.00062	.15513	1.00	-.3652	.3665
	3	1	-.08442	.18438	.891	-.5193	.3505
		2	-.00062	.15513	1.00	-.3665	.3652
Size and purchase influence	1	2	.46957(*)	.17418	.020	.0588	.8804
		3	.15714	.19144	.690	-.2944	.6087
	2	1	-.46957(*)	.17418	.020	-.8804	-.0588
		3	-.31242	.16106	.130	-.6923	.0674
	3	1	-.15714	.19144	.690	-.6087	.2944
		2	.31242	.16106	.130	-.0674	.6923

Source: Primary data

\* The mean difference is significant at the .05 level.

❖ **Cluster 2:** This cluster comprised of 67% female respondents with over 72 % constituting graduates and postgraduates taken together.

❖ **Cluster 3:** This cluster comprised of 56% male respondents with over 60% constituting graduates and higher secondary categories taken together.

Cluster variables like "Look at expiry dates," "Colour and purchase decision," and "Shape and purchase decision" significantly differentiated across all the three clusters. Variables like "Brand name and purchase influence," "Packaging material and purchase decision," "Picture and purchase decision," and "Size and purchase influence" were significant only for Clusters 1 and 2. "Look for ingredients," "Look for manufacturing unit's address," and "Look for nutritional information" significantly differentiated between Clusters (1, 3) and (2, 3). The result of this study emphasized and further supported the importance of packaging as an important element of marketing (Ampuero & Vila, 2006; Bone & France, 2001; Serralvo & Cardoso, 2010).

## Managerial Implications

As chocolate packaging was found to have a high impact on young consumers' purchase patterns, the packed food processors, retailers, and package designers have to rethink their positioning strategies for designing effective packaging, not only to win the young consumers' heart, but also to fight in the competitive clutter. As cluster variables "Colour and purchase decision," and "Shape and purchase decision" were significant across all the three clusters,

package designers must look into the aesthetic blend of 'colour' and 'shape' in targeting these clusters with different strategies. Food Safety Standards (Packaging and Labeling) Regulation, 2011 of the Government of India is a mandate for packed food processors. However, chocolate manufacturers/processors less adhere to it. As the variables "Look for ingredients," "Look for expiry dates," "Look for manufacturing unit's address," and "Look for nutritional information" were significant for Clusters (1,3) and (2,3), the companies can earn the trust of the consumers by projecting and promising the Government mandate they follow with different marketing strategies. Companies can even target the nutritional conscious customers by promoting the 'healthy eating fallacy' on their chocolate packages. As "brand name," "material," "picture," and "size" of the chocolate packages were significant across Clusters 1 & 2, separate marketing strategies need to be devised to serve these niche consumers with respect to these four packaging variables.

## **Limitations of the Study and Scope for Future Research**

The study was restricted to one district of Kerala, and the sample size drawn was small. Future studies may be extended to a wider area with a bigger sample size. As chocolate is a type of product which is consumed irrespective of age groups, the study could even be extended to all age groups - from infants to older people. Such an extended study would throw more light in understanding the significant differences across several demographic variables. Future studies can also be conducted to understand the difference in purchase pattern, if any, across young consumers of urban and rural areas. The study could even be extended to diverse products or brands and even for unbranded chocolates, and the consumer behavior patterns can be interpreted with different methods of analysis such as discriminant analysis, conjoint analysis etc.

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