Bulletin UASVM Horticulture, 70(2)/2013, 287-292
Print ISSN 1843-5254; Electronic ISSN 1843-5394

Customer Segmentation by Attributes Considered Important During the Buying Decision-Making Process for Cheese

Gabriela CHICIUDEAN, Daniel CHICIUDEAN

Faculty of Horticulture, University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania; gabriela_chirla@yahoo.com

Abstract. Two types of attributes characterize food products: intrinsic and extrinsic. The difference between them consists in the fact that the intrinsic ones disappear after consumption (taste, shape) while the second are persistent, often being marketing instruments (price, brand, package etc). In order to build adequate marketing strategies for their products, companies must perform researches among consumers and identify their preferences regarding product attributes important when deciding to purchase a food product. The present study has the main aim to identify how the customers adopt the buying decision for cheese and to build proper market segmentation into types of customers, which share the same preferences, so the cheese producers could build their strategies based on market reality. A survey has been conducted in January-February 2012 in Cluj-Napoca using a questionnaire. This was build also as an audit instrument for the agro-food companies when performing researches among their customers. The analyses used to interpret data are: Keyser-Meyer-Olkin test, Bartlett's Test of Sphericity, Principal Component Analysis and K-means Cluster Analysis. The intrinsic and extrinsic attributes of cheese were grouped into seven factors. The customers were divided into two clusters or groups according to the seven factors identified. The first group is health-oriented, while the second cluster is hedonic-oriented. The research contributed to a very useful customer segmentation which identified two groups of people with different attributes of cheese considered important during the buying decision phase. The agro-food companies could build their strategies into an adequate way, using real information about their customers.

Keywords: intrinsic, extrinsic, cluster, Principal Component Analysis, Bartlett's Test of Sphericity

INTRODUCTION

In the case of food products, consumers are guided in their buying decision-making process by two types of attributes: intrinsic, related to the products itself and extrinsic, a result of marketing efforts. The first type of attributes are related to the nature of the product and its' physical aspect, but their main characteristic consists in the fact that they disappear after the consumption moment. The extrinsic attributes are related to the product too, without being physically a part of it (Fandos and Flavian, 2006). They are associated with the product throughout variables like: price, brand, package, labels, which are the most important marketing instruments. Grunert. (2000), considers like a particular case, the dairy products where the quality dimensions of extrinsic and intrinsic attributes refer to hedonism, health, convenience and processes. Using intrinsic and extrinsic attributes for food products, companies or auditors can frame the customers in the categories mentioned. Consequently in this stage of research, companies have to establish both intrinsic and extrinsic attributes for their products and have to be aware that the intrinsic attributes are no longer sufficient to meet the customer's needs because of the rapid change in agro food markets. So, for the actual customers extrinsic attributes are of a higher importance (Enneking *et al.,* 2005).

In a survey related to traditional food, the attributes established (intrinsic and extrinsic) were split into three categories as follows (Almli *et al*., 2011): Sensory (intrinsic

attributes); Health and ethics (intrinsic combined with health and ethics credence); Purchase and convenience (combination between extrinsic attributes mainly commercial and convenience).

The aim of the article is to identify how the customers adopt the buying decision for cheese and to proceed to market segmentation into types of customers, which share the same preferences, so the cheese producers could build their strategies, based on market reality. Therefore, the analyses used in order to reach the research objectives were: Factor Analysis, the Keiser Meyer Olkin Test, Bartlett's Test of Sphericity, K-Means Cluster Analysis and Discriminant Analysis.

MATERIALS AND METHODS

The research has been carried out in two main phases. First, the attributes for cheese were established, based on the literature review. The most representative and repetitive attributes were chosen. After the pre-testing phase among Romanian consumers, some attributes were modified for a better understanding. The inventory from the scientific literature is presented in Tab. 1.

Tab. 1

Inventory of intrinsic and extrinsic attributes for cheese

Author	Intrinsic attributes	Extrinsic attributes
Johansen *et al* (2011)	low in fat, good taste, nutritious, natural ingredient, pleasant texture, no artificially ingredient, no additives, smells nice, looks nice	Available in shops Cheap Value for money
Veale and Quester (2009)	Taste, texture, appearance, rarity	Price, purpose, brand, country of origin, packaging
Espejel *et al* (2007)	Colour, flavour, form, appearance	Brand name, stamps of quality, price, country of origin, store, packaging, production information
Kupiec and Revell (2001)	contains no additives, pleasant texture natural ingredients, low in fat	Local provenience, cheap Product usage
Hansen (2005)	Fat content, Special ingredients	Product brand
Grunert (2002)		Traditionally produced Eco-package, accessibility to the market, labelling
Bogue *et al* (1999)	Taste , flavour, appearance, texture Maturity level	Packaging, brands, price, new products
Murray and Delahunty (2000)	aroma, flavour, appearance, texture, maturity level, colour, shape	Aesthetics, product performance, branding, nutritional information, convenience of pack security of pack, visibility of cheese, handmade, original, traditional, expensive

The second phase consisted in building the questionnaire and conducting a survey among Napolact cheese consumers. The representative sample consisted in 204 persons from Cluj-Napoca. Because of the invalidation risk, a number of 216 questionnaires were applied. The sample was established based on the number of Cluj-Napoca households, which according to Romanian National Institute of Statistics (2011) were 119378.

Analysis were performed using SPSS 16.0 The Factor Analysis using the Principal Component Analysis is very useful when it comes of having a large number of variables, it main purpose is reducing their number to some representative variables. In order to perform the analysis it is necessary to perform the Keiser Meyer Olkin (KMO) test to measure the sample adequacy. This test is it used to compare de dimensions of the two coefficient categories, the perceived ones and the partal correlation ones. For a proper item correlation, the KMO item must be higher than 0.5 (Carbureanu, 2009).

Bartlett's Test of Sphericity just like Keiser Meyer Olkin Test has the main goal to determine whether the items are correlated or not, so a factorial model could be developed. This analysis is used to test the hypothesis that the correlation matrix is an identity matrix which means that all diagonal terms are one and all off-diagonal terms are zero. The K-Means Cluster Analysis has the role of grouping people or objects in classes without knowing each other. It is a method used to perform a data partition set into k groups. It starts by selecting k initial cluster centers and then iteratively refining them (Wagsta *et al.*, 2001). The use of this analysis helped in configuring the main groups of consumers for cheese. The Discriminant Analysis was used in order to determine the size of each group and its characteristics.

RESULTS AND DISCUSSIONS

The intrinsic and extrinsic attributes of cheese were reduced at seven representative factors using the Principal Component Analysis. The Keiser Meyer Olkin Test of sampling adequacy indicate a value of 0.821and the Bartlett's test of Sphericity is representative $p<0.000$, meaning that the items are correlated.

Tab. 2

Intrinsic and extrinsic attributes for cheese and the factors obtained

Factor	Component elements	Loadings
Factor 1- Preoccupation for a healthy alimentation	Low fat content	0.688
	No additives	0.768
	Made from natural ingredients	0.754
	High nutritional value	0.657
	No artificial ingredients	0.797
Factor 2-Aestethics and reputation	Attractive shape	0.790
	Brand reputation	0.527
	Attractive package	0.770
	Sign of quality	0.601
Factor 3-Food safety and ergonomicity	Security of package	0.774
	Romanian product	0.620
	Information from the label	0.803
	Resalable package	0.551
Factor 4-Convenience and availability	Special flavour	0.513
	Low price	0.635
	High quantity per prepacked piece	0.729
	Accessibility in every store	0.564
Factor 5-Sensory appeal	Texture	0.722
	Natural colour	0.678
	Aspect	0.730
Factor 6-Nature and tradition	Recyclable package	0.602
	Traditional made (ex: no pepper, nuts, herbs)	0.826
Factor 7- Taste	Taste	0.827

The extraction method used was the Analysis of Principal Components, and for factors rotation Varimax procedure was used. A number of 23 components resulted but only the first seven meets the criteria: values <=1. The seven factors were named after their content: Preoccupation for a healthy alimentation, aestethics and reputation, food safety and ergonomicity, convenience and availability, sensory appeal, nature and tradition and taste (Tab. 2).

Using the K-means cluster analysis and the Discriminant Analysis there were identified two types of cheese consumers: the first group has 172 consumers and its main characteristics consist in the preoccupation for a healthy food but also about nature and tradition. It is also important the food safety and ergonomicity. People in this group want that cheese to provide them sensory atractivity and taste is the least important to them.

The second group or cluster has 42 persons and it is negatively related to the first group. It can be observed that things that matter to them are hedonic aspects like esthetics and reputation of cheese and convenience and availability (Tab. 3).

Tab. 3

Clusters characterization considering factor belonging

Factors	Cluster Number and Loadings	
	1	2
Preoccupation for healthy food	1.354	-5.543
Aesthetics and reputation	-0.079	0.323
Food safety and ergonomicity	1.050	-4.298
Convenience and availability	-0.068	0.278
Sensory atractivity	0.473	-1.935
Nature and tradition	0.465	-1.903
Taste	0.043	-0.176

In marketing terms, important findings were made. Producers could now build their marketing strategies according to the consumer's profile. The dominant consumer profile is represented by the desire to eat healthy cheese with no fats, additives, preservatives. This aspect is useful to the company management in order to adapt the production strategy and improve constantly in the health area or maybe even launch other products.

The advertising campaign must be adapted to this particularly characteristic and highlight that the company produces healthy products. The consumers want also ergonomicity when buying cheese and are interested in packaging. This implies resalable package, safety packaging. With a less importance to consumers are the sensorial aspects and taste but also the link with nature and tradition.

The second cluster is composed of people interested in cheese for its aspect and reputation and consider it a way of self-representation. For this specific cluster, the company should adapt the products by extrinsic attributes like attractive and modern packaging, sophisticated labels, in order to satisfy the hedonic orientation of buyers.

If the number of persons in each cluster is taken into consideration, it can be observed that the intrinsic attributes of cheese are more important than the extrinsic ones, because more people are looking for attributes related to the product itself (taste, shape, ingredients) than for exterior issues like packaging, label or brand.

CONCLUSION

The Factor Analysis is a useful instrument to obtain representative factors for extrinsic and intrinsic attributes. The K-means Cluster Analysis and the Discriminant Analysis allowed a proper segmentation for cheese consumers taking into consideration the attributes important to them during the buying decision-making process.

Two major clusters were obtained, each having specific buying behavior. While the first cluster is health-oriented, careful to the intrinsic attributes of cheese, the second cluster is hedonic-oriented, cheese being appreciated for its reputation and exterior aspect. Therefore, the marketing efforts must be more oriented towards the second cluster because people from this group are sensitive to brand, package aesthetic, label and any other exterior manifestation. For the first cluster, marketing efforts should be more oriented towards health-related messages attached to the products, but in this case, the production sector inside the company has the more important role, when establishing future products and ingredients.

The analysis is considered to be an instrument for every food company which is interested about its consumers. The attributes could differ depending of the product analyzed, but the results obtained are very useful for building future marketing strategies according to the market needs.

REFERENCES

1. Almli, V. L., W. Verbeke, F. Vanhonacker, T. Næs and M. Hersleth (2011). General image and attribute perceptions of traditional food in six European countries. Food Quality and Preference. 22:129–138.

2. Bogue, J.C., C.M. Delahunty, M.K. Henry and J.M. Murray (1999). Market oriented methodologies to optimize the consumer acceptability of Cheddar-type cheeses. British Food Journal. 101(4):301-316.

3. Cărbureanu, M. (2010). Factor Analysis- a Method applied in the development area. Analele Universităţii "Constantin Brâncuşi"Târgu-Jiu. seria Economie. 1:187- 194.

4. Enneking, U., C. Neumann and S. Henneberg (2005). How important intrinsic and extrinsic product attributes affect purchase decision. Food Quality and Preference. 18:133–138.

5. Espejel, J., C. Fandos and C. Flavian (2007). The role of intrinsic and extrinsic quality attributes on consumer behaviour for traditional food products. Managing Service Quality, 17(6):681-701.

6. Fandos, C. and C. Flavian (2006). Intrinsic and extrinsic quality attributes loyalty and buying intention: an analysis for a PDO product. British Food Journal. 108(8):646-662.

7. Grunert, K. G., T. B.Larsen and L. Bredahl (2000). Three issues in consumer quality perception and acceptance of dairy products. International Dairy Journal. 10:575-584.

8. Grunert, K. G. (2002). Current issues in the understanding of consumer food choice. Trends in Food Science & Technology. 13:275–285.

9. Hansen, T. (2005). Understanding consumer perception of food quality: the cases of shrimps and cheese. British Food Journal.107(7):500-525.

10.Johansen S. B., T. Naes and M. Hersleth (2011). Motivation for choice and healthiness perception of calorie-reduced dairy products. A cross cultural study. Appetite. 56:15-24.

11.Kupiec, B., and B. Revell (2001). Measuring consumer quality judgements. British Food Journal. 103(1):7-22.

12.Murray, J.M. and C.M. Delahunty (2000). Mapping consumer preference for the sensory and packaging attributes of Cheddar cheese. Food Quality and Preference. 11:419-435.

13.Veale, R. and P. Quester (2009). Tasting quality: the roles of intrinsic and extrinsic cues. Asia Pacific Journal of Marketing and Logistics. 21(1):195-207.

14.Wagsta, K., C. Cardie, S. Rogers and S. Schroedl (2001). Constrained K-means Clustering with Background Knowledge. Proceedings of the Eighteenth International Conference on Machine Learning. 577-584.

15. ***Romanian National Institute of Statistics, (2011). Press Statement regarding preliminary results of the Population and Households Census