

Uncertain Supply Chain Management

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Investigating the effect of packaging design on persuading consumers

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CHRONICLE

Article history:

Received September 10, 2013
 Received in revised format
 10 December 2013
 Accepted December 12 2013
 Available online
 December 16 2013

Keywords:

*Factor analysis
 Packaging design
 Product development*

ABSTRACT

This paper presents an investigation on the role of packaging design on persuading consumer to buy different products in city of Tehran, Iran. The proposed study designs a questionnaire in Likert scale consists of 26 questions, distributes it among some Iranian experts and analyzes it based on principal component analysis. During the survey, the number of questions is reduced from 26 to 23. Cronbach alpha is calculated as 0.88 and Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Approx. Chi-Square are 0.80 and 1880, respectively. Based on the results of our survey, we have derived five factors including requirement attributes, proportionality components, consumer choice, product appearance attractiveness and consumer characteristics.

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1. Introduction

Packaging plays essential role on promoting products, product development and there are many studies on how to promote different types of products and services through appropriate packaging (Reimann et al., 2010). According to Giese et al. (2013), key design properties of marketing artifacts that influence consumer response include perceived attractiveness. The packaging design normally adds value to a product, which has major impact on customers' purchasing decision process especially during the purchase event. However, most entrepreneurs do not have sufficient knowledge and skills regarding technology of packaging design. They face problems of choosing appropriate designs, which match with their products and services as well as packaging design systems. These problems may create time lost and an increment in production expenses. Auttarapong (2012) presented a decision support system in designing product packages where one will be able to specify product characteristics with its conditions such as graphic element and application aligned with the product package. To reach the corresponding expert system, design rules are extracted from the analysis of packaging design experts and customer's perception. Schoormans and Robben (1997) investigated the impact of the degree of deviation of coffee packages on consumers' attention and categorization. They reported that when redesigning stimuli in marketing practice, for example of products or packages, a trade-off had to be made between the high attention getting value of discrepant stimuli. According to Clement et al. (2013), it is widely recognized that the human brain

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maintains limited capacity for perceptual stimuli and consumers' visual attention, when looking for a specific product or brand in a grocery store and examined the relationship between abundant in-store stimuli and limited human perceptual capacity. They examined the effect of package design features on visual attention by collecting the necessary data through two eye-tracking experiments, one in a grocery store based on wireless eye-tracking equipment, and another in a lab setting. They reported that consumers had fragmented visual attention during grocery shopping, and that their visual attention was simultaneously affected and disrupted by the shelf display. Physical design features such as shape and contrast dominated the initial phase of searching.

Çakır and Balagtas (2013) explained that it is common among producers of consumer packaged products to reduce the volume of product per package such that the new size replaces the old one named package downsizing. They investigated the extent to which consumers have various sensitivities to package price and package size in order to understand on the managerial implications of package downsizing. They estimated a random utility model of demand to measure consumer response to price and package size based on household scanner panel data on bulk ice cream purchases in Chicago. The main finding was that consumers were less responsive to package size than to price; the demand elasticity with respect to package size was approximately one-fourth the magnitude of the demand elasticity with respect to price. This result implied that marketing managers could apply downsizing as a hidden price increase to pass through increases in production costs, that is, the expenses of raw materials, and maintain, or increase, their profits.

2. The proposed method

This paper presents an investigation on the role of packaging design on persuading consumer in city of Tehran, Iran. The proposed study designs a questionnaire in Likert scale consists of 26 questions, distributes it among some Iranian experts and analyzes it based on principal component analysis. During the survey, the number of questions has been reduced to 23 because of existing skewness on some data. Cronbach alpha is calculated as 0.88 and Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Approx. Chi-Square are 0.80 and 1880, respectively. Table 1 demonstrates the summary of communalities associated with the data. As we can observe from the results of our investigation, all data are well above 0.50, which validates the quality of the data.

Table 1

The summary of communalities

	Initial	Extraction
VAR00001	1.000	.572
VAR00002	1.000	.386
VAR00003	1.000	.758
VAR00005	1.000	.766
VAR00006	1.000	.544
VAR00007	1.000	.740
VAR00008	1.000	.778
VAR00009	1.000	.440
VAR00010	1.000	.530
VAR00011	1.000	.710
VAR00012	1.000	.516
VAR00013	1.000	.610
VAR00014	1.000	.631
VAR00015	1.000	.554
VAR00016	1.000	.773
VAR00017	1.000	.482
VAR00018	1.000	.643
VAR00019	1.000	.602
VAR00020	1.000	.637
VAR00022	1.000	.609
VAR00024	1.000	.690
VAR00025	1.000	.652
VAR00026	1.000	.649

In addition, Fig. 1 demonstrates the results of Scree plot, which helps to extract the number of appropriate factors.

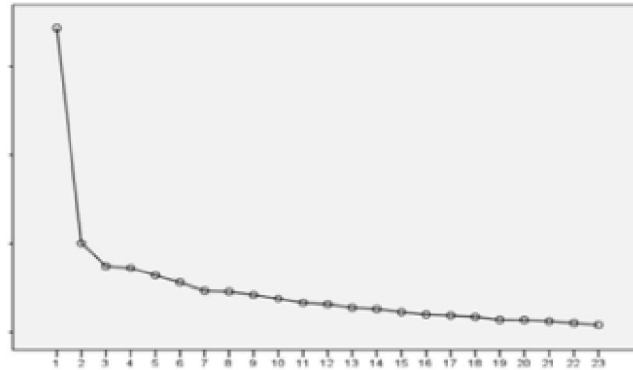


Fig. 1. Scree plot

As we can observe from the results of Scree plot, there are five factors with valid eigenvalue. Table 2 demonstrates the rotated factors extracted from principle component analysis.

Table 2

The summary principle component analysis after rotation

	Component					
	1	2	3	4	5	6
VAR00024	.736					
VAR00022	.728					
VAR00026	.663					
VAR00013	.616	.355				
VAR00011		.798				
VAR00014		.669			.361	
VAR00012		.620				
VAR00010	.337	.540				
VAR00002	.356	.367				
VAR00003			.798			
VAR00008			.779			
VAR00020	.401		.513			
VAR00005				.818		
VAR00001				.702		
VAR00025	.540			.563		
VAR00009			.390	.499		
VAR00006			.346	.452		.331
VAR00016					.817	
VAR00018					.700	
VAR00015					.505	.372
VAR00017	.388				.463	
VAR00007						.849
VAR00019	.409					.523

Based on the results of our survey, we have derived five factors including requirement attributes, proportionality components, consumer choice, product appearance attractiveness and consumer characteristics. Next, we present details of each factor.

3. The results

In this section, we present details of our findings associated with each factor through the implementation of principle component analysis.

3.1. The first factor: Requirement attributes

The first factor is associated with requirement attributes and it includes five sub-components summarized in Table 3 as follows,

Table 3

The summary of factors associated with requirement attributes

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Creating purchase decision	0.735			
Convincing drivers	0.844	2.489	63.223	63.223
Creating motivation	0.764			
Competitive market	0.720			
Product evaluation	0.664			

Cronbach alpha = 0.83

As we can see from the results of Table 3, convincing drivers is the number one priority on convincing customers followed by creating some good motivation and creating purchasing decision.

3.2. The second factor: Proportionality components

The second factor is associated with proportionality components and it includes four sub-components summarized in Table 4 as follows,

Table 4

The summary of factors associated with proportionality components

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Price of package	0.748			
Elasticity to size of package	0.766	2.039	56.766	56.766
Favorable assessment of the consumer	0.720			
Expected use of the product	0.694			

Cronbach alpha = 0.67

According to the results of Table 4, elasticity to size of package is the number one priority on convincing customers to purchase followed by price of package, favorable assessment of the customer and expected use of the product.

3.3. The third factor: Customer choice

The third factor is associated with customer choice and it includes three sub-components summarized in Table 5 as follows,

Table 5

The summary of factors associated with customer choice

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Visual communication	0.663			
Graphic elements	0.863	2.094	66.782	66.782
Consumer preferences	0.798			

Cronbach alpha = 0.88

According to the results of Table 5, Graphical elements are the most important component for convincing customers to purchase followed by consumer preferences and visual communication.

3.4. The fourth factor: Physical attractiveness

The fourth factor is associated with physical attractiveness and it includes five sub-components summarized in Table 6 as follows,

Table 6

The summary of factors associated with Physical attractiveness

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Physical shape of packaging	0.780			
Appearance	0.898	1.530	38.238	38.238
Promoting product attractiveness	0.425			
Capability of attracting customer	0.808			
Data processing	0.485			

Cronbach alpha = 0.62

According to the results of Table 6, Appearance is the most important component for convincing customers to purchase followed by Capability of attracting customer, physical shape of packaging, data processing and promoting product attractiveness.

3.5. The fifth factor: Consumer characteristics

The fifth factor is associated with consumer characteristics and it includes four sub-components summarized in Table 7 as follows,

Table 7

The summary of factors associated with consumer characteristics

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Educational backgrounds	0.780			
Size of family	0.898	1.530	38.238	38.238
Family purchase	0.425			
Demand for product	0.808			

Cronbach alpha = 0.69

According to the results of Table 6, Appearance is the most important component for convincing customers to purchase followed by Capability of attracting customer, physical shape of packaging, data processing and promoting product attractiveness.

4. Conclusion

In this paper, we have presented an empirical investigation to find important factors influencing packaging products sold in city of Tehran, Iran. Using principle component analysis, the study has detected five important factors including requirement attributes, proportionality components, consumer choice, product appearance attractiveness and consumer characteristics. In terms of requirement attributes, convincing drivers is the number one priority on convincing customers followed by creating some good motivation and creating purchasing decision. The second factor is associated with proportionality components and it includes four sub-components where elasticity to size of package is the number one priority on convincing customers to purchase followed by price of package, favorable assessment of the customer and expected use of the product.

The third factor, customer choice, includes three sub-components where graphical elements are the most important component for convincing customers to purchase followed by consumer preferences and visual communication. The fourth items is associated with physical attractiveness and it includes five sub-components where Appearance is the most important component for convincing customers to purchase followed by Capability of attracting customer, physical shape of packaging, data processing and promoting product attractiveness. Finally, consumer characteristics is the last item and it includes four sub-components where Appearance is the most important component for convincing customers to purchase followed by Capability of attracting customer, physical shape of packaging, data processing and promoting product attractiveness.

Acknowledgement

The authors would like to thank the anonymous referees for the comments made on earlier version of this paper.

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