

# Influence of the shape on the consumers perception of the packaging attributes

## ABSTRACT

*Packaging for fast moving consumer goods (FMCG) demands constant attention in order to stay competitive in modern dynamic markets. FMCG consumers do not think about the purchasing product until they enter the place of purchase. This emphasizes importance of the communication in a place of purchase. Alongside promotional banners, displays and counters, packaging can be used for this purpose. While in-store promotional banners, displays and counters represent additional cost, the packaging as the integral part of the product can be used as an important marketing tool that does not add to product cost. Thus packaging becomes an important marketing tool that does not add to product cost. Marketers, distributors and researchers as well must take into consideration the complexity of consumer behaviour to achieve desired results. Alongside graphic design, material, colour, etc. packaging shape is considered as an important tool for product differentiation and promotion. Having this in mind, it is unclear why the influence of the packaging shape on the consumer remains the least examined of all packaging characteristics. The aim of this research is to understand the influence of packaging shape design on the consumer's perception. The survey study conducted among the consumers of the fast moving consumer goods gave clear insight into the influence of packaging shape on the perception of packaging characteristics. The results can help to improve packaging shape design in order to achieve better market impact.*

## KEY WORDS

Packaging, Design, Shape

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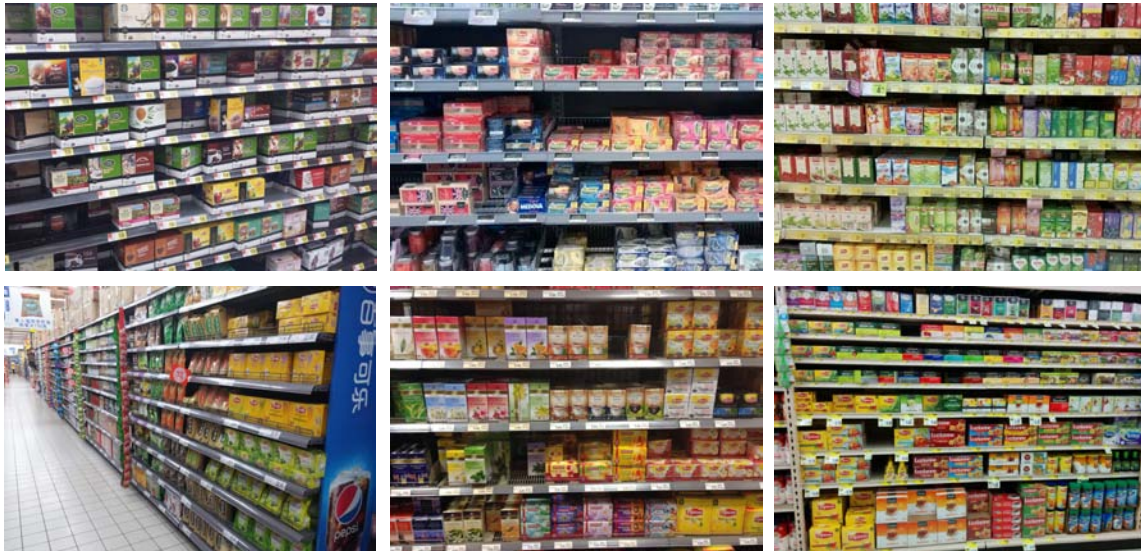
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## Introduction

Packaging is an integral part of the product - it is almost impossible today to find fast moving consumer goods products (FMCG), such as food, beverages, hygiene products or medications that are sold without packaging. As a very important tool for product presentation, packaging requires constant attention from the marketers, distributors and researchers. Taking into consideration complexity of consumer behaviour and ever growing competition, it is necessary to adopt adequate changes in product packaging design and marketing to achieve positive market results. According to Connolly and Davidson [1996], 73% of purchasing decisions are done in stores. Thus,

purchasing decisions depend on what is communicated in point of sale. This emphasizes the importance of the communication in a place of purchase. Today many consumers are buying under high levels of time pressure and, thus, they do not pay attention to different packaging elements [Silayoi & Speece, 2004]. Studies suggest that attention that people give to the FMCG is extremely limited, where the average purchase time for this group of products is 8.5 seconds [Hoyer, 1984]. This trend is not affected by cultural and geographical differences.

Many claim that absence of differentiation in saturated markets encourages fierce competition, especially in FMCG segment.



» **Figure 1:** Photos of store shelves with tea packaging taken in stores all over the world: NY, USA; Copenhagen, Denmark; Prijedor, BiH; Dongguan, China; Geneva, Switzerland and Novi Sad, Serbia

The problem can be observed in aisles in many supermarkets around the world. Figure 1 illustrates an overwhelming number of products offered to the consumer by showing examples of store shelves filled with tea packaging, a typical example of FMCG, from all over the world.

Alongside promotional banners, displays and counters, packaging can be used for this purpose. While in-store promotional banners, displays and counters represent additional cost, the packaging as the integral part of the product can be used as an important marketing tool that does not add to product cost. Packaging as a communication device is an important factor in purchasing decisions making process. It is becoming an ultimate selling tool, which stimulates impulsive purchases. Besides the product itself, the packaging is one of the main tools for in-store marketing [Schoormans & Robben, 1997]. Packaging is used to attract the consumer and to ensure the first purchase, but after the first purchase, if the product itself does not satisfy the requirements of the consumer, they will no repurchase of the product. Many of the studies show that packaging aesthetic and functionality attributes influence consumer behaviours and the perception of the products value. These attributes are especially important in the markets where all other consumer's needs have already been satisfied [Reimann et al, 2010].

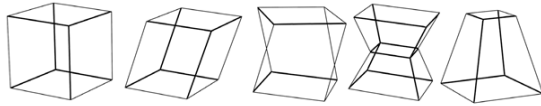
The packaging shape can be an important factor in the differentiation of products among the competition. Graphic design, material, colour and shape are the most important factors taken into consideration when judging a packaging. Influence of the packaging shape on the consumer's perception is the least examined of factors mentioned, although it is considered as an important tool for product differentiation and promotion. Possibly due to investments required for

development and implementation of original packaging shape. Bloch [1995] suggests that there are many limitations in developing original products' or packaging shape. Firstly there are production and cost restrictions, which consider materials and machines. Labour can also be considered as significant restriction factor since it needs to be considered how much time it takes to seal or to handle certain packaging of a specific shape. It is possible that FMCG packaging shapes presented in the market are undifferentiated for this reason.

Buying decisions are influenced by: perception, motivation, learning and beliefs. Consumers use these factors to interact with their world, to recognize their feelings, gather and analyse information, formulate thoughts and opinions and take action. Therefore, the process in which consumers select, organize and interpret stimuli into a meaningful whole is called perception [Lamb, 2009].

Authors who have dealt with packaging shape research determined that packaging shape is indeed a good way to identify and classify the products. It is suggesting perceptual categorization and it also generates inferences regarding other product attributes [Berkowitz, 1987]. The form is deliberated as an essential factor in consumer choice, and it can create an advantage in comparison with the competitors. The packaging form can elicit emotions, attitudes and buying behaviours [Pantin-Sohier, 2009]. According to Schoormans and Robben [1997], the more the shape gets complex and different than standard, the stronger attention is evoked. Geometrically more complex shapes appear larger than geometrically simpler ones of equal height and size, which can be used for obtaining advantage [Garbe et al, 2009]. Also, rectangular shapes are perceived as bigger than round shapes [Krider et al, 2001].

There are several ways to achieve gradation of the packaging complexity. The shape can be manipulated from the basic six-sided box shape to very complex shapes by increasing the number of sides or by applying different modification operations such as slicing, skewing, twisting, squeezing, tapering, etc. Some of the mentioned operations are represented in Figure 2.



» **Figure 2:** Shape transformation operations: a) basic six-sided cube, b) skewing, c) twisting, d) squeezing, e) tapering.

The purpose of this research is to understand the influence of packaging shape design on the consumer's perception, through insight in the judgment of the packaging attributes influenced by shape. Judged attributes were: creativity, functionality, attractiveness, aesthetic and perceived value (price). The correlation between the attributes and perceived value was calculated.

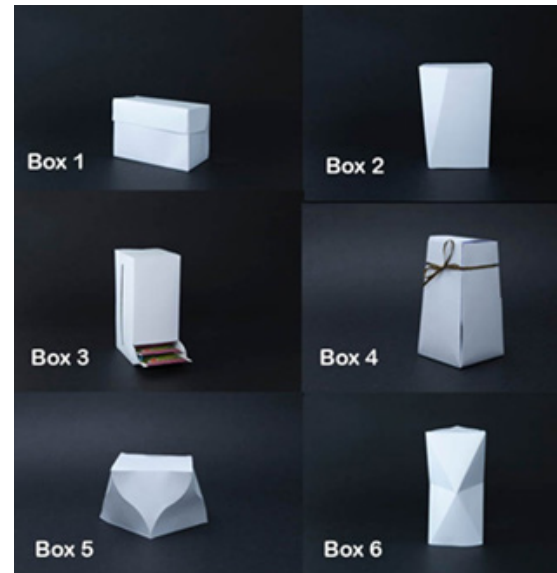
## Methods and materials

The experiment was divided into two parts. First, the participants were asked to judge the importance of packaging attributes creativity, functionality, attractiveness, aesthetic, value (price) when making purchasing decisions, by ranking them from 1 to 6. In the second part of the survey, an image of 6 different boxes intended for tea packaging (Figure 3), was shown to the participants in such a manner that all the boxes can be observed at once. After the participants were familiarised with all the boxes, each of the boxes was shown individually so its attributes could be judged (Figure 4). The sequence of the boxes was randomised for each participant. The judgment of the attributes was done using Likert's bipolar scaling method, grades ranging from -3 to 3 (-3 representing a negative grade of the attribute, 0 representing indifference and 3 positive grade of the attribute). The value of the packaging was graded from 1 to 6 (1 for the least expensive and 6 for the most expensive box).

The online survey conducted with 135 participants, where 127 participants successfully finished the survey and provided meaningful data. The age range of participants was 18-66 years with different backgrounds. Demographic data of participants, such as age and gender, was also collected.

As a typical FMCG product, a tea packaging has been used for the purpose of the investigation. The models of 6 differently shaped boxes were developed in Adobe Illustrator, cut and formed. By consulting design

literature as well as the specialists in the packaging design field, the typical shapes of packaging scaling in complexity and creativity were chosen. Note that some of the shapes already exist in FMCG market. Models were stripped of all the graphic elements retaining only the shape of the packaging. Models of packaging were photographed under constant lighting conditions to eliminate all influential factors except the shape.



» **Figure 3:** Models of packaging used as stimuli



\* 6. EVALUATE BOX NO: 5  
(example: -3 not attractive, 3 attractive)

	-3	-2	-1	0	1	2	3
CREATIVITY	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
AESTHETIC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ELEGANCE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
FUNCTIONALITY	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ATTRACTIVENESS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[ Prev ] [ Next ]

» **Figure 4:** Layout of the individual survey box

## Results and discussion

IBM SPSS Statistics Data Editor Application and MS Excel were used to perform the analysis. Descriptive statistics were calculated for all the attributes of the packaging. Kruskal-Wallis test was used in order

to determine if there are statistically significant differences between grades of box attributes caused by shape factor, group and pairwise comparison. ANOVA repeated measures was used to determine if there are statistically significant differences between perceived prices caused by packaging shape.

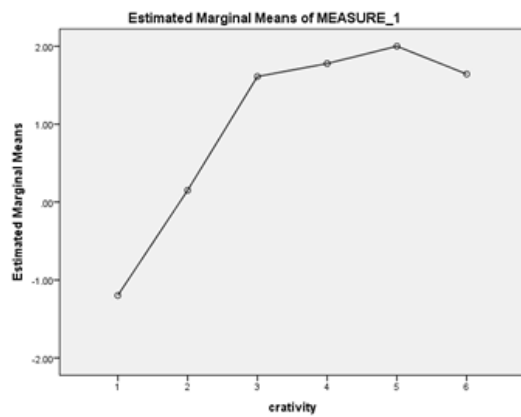
### Creativity

Results shown in Table 1 represent descriptive statistics, alongside graphical representation, for creativity attribute (-3 representing not creative, 3 representing very creative).

**Table 1**

Descriptive statistics for creativity attribute

Creativity	Box 1	Box 2	Box 3	Box 4	Box 5	Box 6
Mean	-1.2047	.1575	1.6063	1.7795	2.0000	1.6429
Median	-1.0000	1.0000	2.0000	2.0000	2.0000	2.0000
Mode	-3.00	1.00	3.00	3.00	3.00	3.00
Std. Dev.	1.61510	1.54007	1.35785	1.43047	1.47465	1.70395



Kruskal-Wallis test shows a statistically significant difference between the grades for creativity attribute between all 6 boxes ( $H(2) = 281.407, p = 0.000$ ), with a mean rank of 149.29 for Box 1, 258.27 for Box 2, 438.87 for Box 3, 469.19 for Box 4, 509.09 for Box 5, 461.94 for Box 6. Pairwise comparison done by Kruskal-Wallis test shows a statistically significant difference ( $p < 0.05$ ) between the grades for creativity attribute between all pairs except pairs Box 3 - Box 4, Box 3 - Box 6, Box 4 - Box 5, and Box 5 - Box 6.

Boxes 4 to 6 all received high grades regarding creativity which can be attributed to the complexity of the shape. Consumers are accustomed to square packaging as the most usual shape of the tea packaging on the market so that the high grades can be attributed to the surprise factor also. Creativity can contribute to consumers attention grabbing.

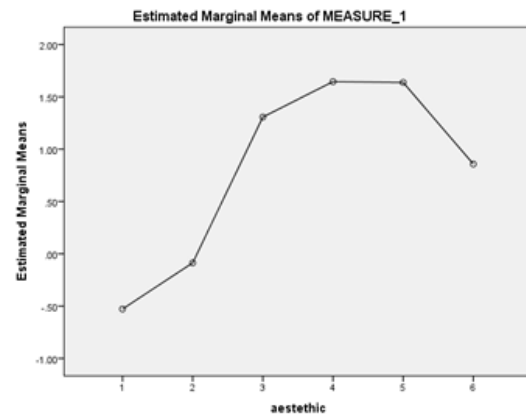
### Aesthetic

Results shown in Table 2 represent descriptive statistics, alongside graphical representation, for the aesthetic attribute (-3 representing ugly, 3 representing pretty).

**Table 2**

Descriptive statistics for aesthetic attribute

Aesthetic	Box 1	Box 2	Box 3	Box 4	Box 5	Box 6
Mean	-.5276	-.0866	1.3071	1.6457	1.6378	.8583
Median	.0000	.0000	2.0000	2.0000	2.0000	1.0000
Mode	.00	1.00	2.00	2.00	3.00	2.00
Std. Dev.	1.60765	1.58877	1.35408	1.30035	1.49427	1.67959



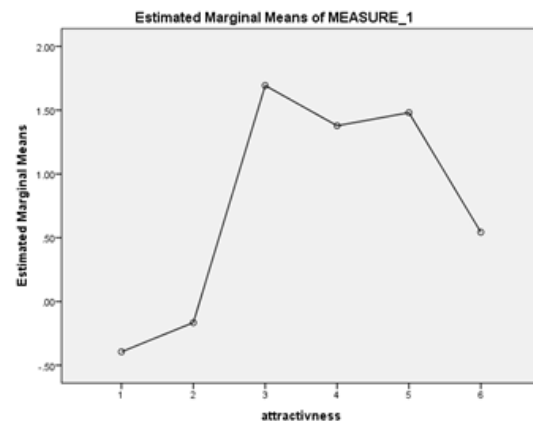
### Attractiveness

Results shown in table 3 represent descriptive statistics, alongside graphical representation, for attractiveness attribute (-3 representing not attractive, 3 representing very attractive).

**Table 3**

Descriptive statistics for attractiveness attribute

Attractiveness	Box 1	Box 2	Box 3	Box 4	Box 5	Box 6
Mean	-.3937	-.1654	1.6929	1.3780	1.4803	.5433
Median	.0000	.0000	2.0000	2.0000	2.0000	1.0000
Mode	.00	.00	3.00	2.00	3.00	2.00
Std. Dev.	1.58444	1.61227	1.23771	1.39687	1.53711	1.80280



Kruskal-Wallis test shows a statistically significant difference between the grades for attractiveness attribute between all 6 boxes ( $H(2) = 177.643$ ,  $p = 0.000$ ), with a mean rank of 235.20 for Box 1, 261.19 for Box 2, 500.07 for Box 3, 459.39 for Box 4, 476.23 for Box 5, 356.91 for Box 6. Pairwise comparison done by Kruskal-Wallis test shows a statistically significant difference ( $p < 0.05$ ) between the grades for attractiveness attribute between all pairs except pairs Box 1 – Box 2, Box 3 – Box 4, Box 3 – Box 5, Box 4 – Box 5.

Again, boxes 4 to 6 have received highest grades. Results for Box 3 and Box 6, which got similar grades for creativity and aesthetic, are quite different for attractiveness attribute probably influenced by functionality.

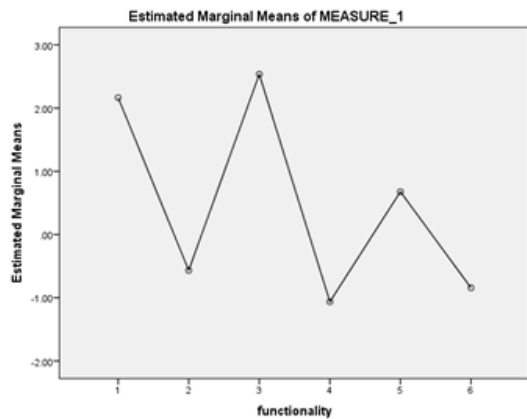
### Functionality

Results shown in Table 4 represent descriptive statistics, alongside graphical representation, for functionality attribute (-3 representing not functional, 3 representing very functional).

**Table 4**

Descriptive statistics for functionality attribute

Functionality	Box 1	Box 2	Box 3	Box 4	Box 5	Box 6
Mean	2.1654	-.5669	2.5354	-1.0630	.6772	-.8425
Median	3.0000	.0000	3.0000	-1.0000	1.0000	-1.0000
Mode	3.00	1.00	3.00	-3.00	1.00	-3.00
Std. Dev.	1.21996	1.63586	.81450	1.66547	1.71308	1.77024



Kruskal-Wallis test shows a statistically significant difference between the grades for functionality attribute between all 6 boxes ( $H(2) = 379.561$ ,  $p = 0.000$ ), with a mean rank of 560.71 for Box 1, 266.31 for Box 2, 605.62 for Box 3, 220.52 for Box 4, 476.23 for Box 5, 356.91 for Box 6. Pairwise comparison done by Kruskal-Wallis test shows a statistically significant difference ( $p < 0.05$ ) between the grades for functionality attribute between all pairs except pairs Box 2 – Box 6, Box 4 – Box 6.

Functionality judgment shows that simple traditional design is recognised as most functional. As previous-

ly mentioned functionality is an important factor in attractiveness judgment. When judging attractiveness, the functionality of the box has played an important role. This can be seen by comparing grades for Box 3 and Box 6, which got similar grades for creativity and aesthetic, but are quite different in regards to their functionality as it is shown in Table 4.

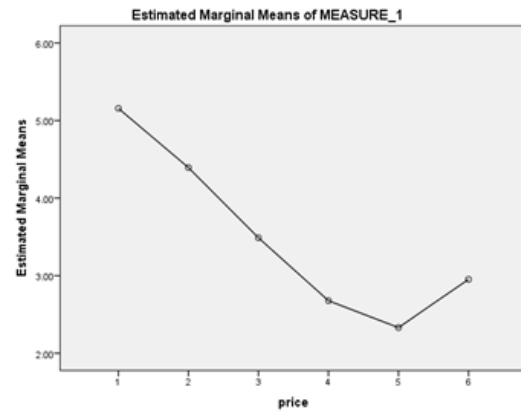
### Price presumption

Results shown in Table 5 represent descriptive statistics, alongside graphical representation, for price presumption (1 representing low price, 6 representing high price).

**Table 5**

Descriptive statistics for price presumption

Price	Box 1	Box 2	Box 3	Box 4	Box 5	Box 6
Mean	5.1575	4.3937	3.4882	2.6772	2.3307	2.9528
Mode	6.00	5.00	4.00	1.00	2.00	3.00
Std. Dev.	1.58076	1.07760	1.34440	1.40792	1.49632	1.41902



Using an ANOVA repeated measures with a Greenhouse-Geisser correction, the mean scores were statistically significantly different ( $F(5, 127) = 63.92$ ,  $p < 0.05$ ). This indicates that packaging shape is a significant factor in price presumption. Box 5 judged as most valuable is also most complex shape. Box 1, a simple rectangular box was judged as least valuable. Post hoc tests revealed statistically significant differences ( $p < 0.05$ ) between all pairs of packaging except between pairs Box 4 – Box 5 and Box 4 – Box 6. This is due to similar mean value for a price between three highest ranked boxes.

Correlation between all examined attributes and the price were calculated after the grades for the price were reversed in order to make correlation results more comprehensible. There was a positive correlation between the variables creativity and price presumption, ( $r = -0.961$ ,  $n = 6$ ,  $p = 0.002$ ). This indicates that participants perceived creative packaging shapes as more expensive. There was also a positive correlation between the aesthetic attribute and price presumption ranking, ( $r = -0.943$ ,  $n = 6$ ,  $p = 0.005$ ), suggesting that participants

perceived aesthetical shapes as more expensive. There was a positive correlation between attractiveness attribute and price assumption ( $r = 0.82$ ,  $n = 6$ ,  $p = 0.046$ ). There was no correlation between attribute functionality and price assumption. This means that price assumption is not correlated to the packaging functionality features. Results of correlation analysis suggest a high positive correlation between individual preference attributes and price assumption. It is presumed that participants contemplate the creative packaging shapes as expensive because they are accustomed to seeing well-designed and pleasing objects at high prices.

## Conclusions

Results presented in this research can be viewed as a preliminary report considering that the consumers' responses to packaging designs reflect the influence of a complex array of variables that were excluded from this research. Attributes creativity, aesthetic and attractiveness showed to be closely related not only to each other but with consumers price presumption. This indicates that consumers can recognise and appreciate well-designed packaging that is reflected in higher presumed packaging price. Results support earlier studies that propose that Western consumers tend to strive towards more unusual and uncommon shapes and designs. The functionality of the packaging is an important factor, although correlation with the price presumption it was shown that functionality influences attractiveness attribute of the packaging.

It would be interesting to explore if the consumers perception of the packaging is the same when packaging is presented with all of the graphic elements. It might be interesting to explore the influence of packaging shape in different international markets

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