

INFLUENCE OF PACKAGING ON TASTE PERCEPTION

A.S. TECĂU¹ I.B.CHIŢU²

Abstract: *Starting with the role of packaging in the marketing mix, this paper aims to demonstrate to what extent the packaging influences consumer perception of taste. Thus, a marketing experiment was conducted which included two consecutive assessments of samples of chocolate (one of which being achieved by the blind test), and measured the preferences in terms of the respective brands of chocolate by a numerical scale. The experiment was conducted on a sample of 115 subjects and the results were processed using the Wilcoxon test. A significantly higher mark was received when subjects thought they tasted a chocolate with more attractive packaging. These results show the influence of packaging on consumer perception and importance to be given to packaging in marketing strategies.*

Key words: *packaging, taste perception, marketing experiment*

1. Introduction

Packaging represents the activities of designing and producing the container or wrapper for a product and even if traditionally the role of packaging was to protect the product in our days the packaging becomes an important marketing tool (Kotler, Armstrong, 2010, p. 255). The packaging has, alongside other components of the product, a particularly important role in influencing consumer subjective beliefs and objective behavior (Wright, et al., 2013). Therefore, packaging must be closely related to marketing strategies, as it can be an important element of product differentiation by contributing to value creation for firms (Rundh, 2016).

The same idea is led by the results of a study on how packaging affects consumers' perception of the product. The authors conclude that the design of the packaging has a particular influence on the perception of product quality regardless of the other attributes of the product (like price), and brand strategist and packaging designers must take this into account (Van Ooijen, et al., 2017).

¹ *Transilvania University of Braşov*, alina_tecau@unitbv.ro,

² *Transilvania University of Braşov*, ioana.chitu@unitbv.ro.

2. Literature Review

In the literature, there are many studies on the influence of packaging on consumer perception of the taste of products. For instance, it was studied if the potency-related associations represented by shape curvature and color saturation of yoghurt packages transfer to subsequent taste experiences and the results indicate that the effects on taste experience are most emphasized for consumers with a sensitivity to design and can influence the product evaluation and price expectations (Becker, et al., 2011). The results of a study that examines the way how visual and verbal cues influencing product evaluation, taste evaluation and purchase intention can help in choosing the right image for packaging design. For example, a picture of processed foods leads to better assessments of the taste of most consumers compared to unprocessed food images that can only influence those consumers who are adept at healthy eating (Machiels and Karnal, 2016).

The influence of the packaging on children is well-known, especially if on this packaging appear characters known and loved by them (Lapierre, Vaala and Linebarger, 2011). An experiment made on forty 4- to 6-year-old children revealed that children preferred the taste of products that had popular cartoon characters on the packaging, but these effects were weaker for healthy products, like carrots than for snacks. The authors even suggest a restricted on using such characters to promote products that are considered unhealthy (Roberto, et al., 2010). In the same idea Enax et al. (2015) states that the food market researches show that those marketing strategies are more often used for promote low nutritional quality products.

Starting from the idea that semantic knowledge on products (logo, label, image and so on) can influence the taste, a study suggests that consumers match shape dimension with taste "on the basis of their common affective connotation" and these findings can be important for researchers interested in taste-vision correspondence, for food-marketers and for product designers (Velasco, et al., 2016). Another study, Velasco, et al. (2014) stated that "sweet tastes are better expressed by means of rounded shapes, typefaces, and names, and low-pitched sounds, whereas sour tastes are better conveyed by means of angular shapes, typefaces, and names, and high-pitched sounds". Regarding influence of other design variables on consumer expectations, variables like color and format, specialists have come to the conclusion that consumer desire is more influenced by color than the format of the package (Rebollar, 2012). In the same idea, Beneke, et al. (2015) concludes that the color of the packaging can influence consumer behavior and suggest considering the association between the color of package and consumer response.

In the fierce battle on the food market, packaging gets more and more valences in promoting products and using psychology and cognitive neuroscience it "starting to stimulate the consumer's senses more effectively and make the products (not to mention the experience of consuming them) more memorable and enjoyable". The use of multisensory beverage packaging can enhance a consumer's multisensory product experience (Spence and Piqueras-Fiszman, 2012).

3. Research Methodology

The purpose of this research was to determine the cause-effect relationship between the packaging (cause) and the perception (effect). To demonstrate the extent to which packaging influences the perception of taste a marketing experiment has been conducted aimed at assessing whether the package lead to changes in taste perception for chocolate products in young people.

The marketing experiment was conducted in the laboratory, which offered the possibility of direct measurement of the effects of stimuli to which subjects were subjected.

In order to carry out the proposed experiment, two chocolate brands were selected: Africana and Luado. Africana is a trademark belonging to Mondelez Romania, the former Kraft Foods, which also owns Milka, Poiana, Oreo, Tuc etc. This brand of chocolate has been present in the preferences of Romanian consumers since 1990's, being cheaper than Poiana, Milka or Kandia, and can be found in almost in any store selling chocolate. Luado is a brand of Brasov chocolate, newer on the Romanian market being registered only in 2011. This brand is promoted as "the tastiest Belgian chocolate in Romania" and its price is about 10 times higher than that of Africana chocolate. Currently there is one selling point in Brasov and an online shop.

It was used a simple experimental scheme, namely the pre-test and post-test scheme of the experimental group, with a control group:

experimental group:

E1: R O1 O2
E2: R O3 X O4

X = group exposure to experimental treatment;

O = measurement of the effects on the dependent variable;

R = signifies the random setting of the groups and treatments.

E= stages of experiment

Hypothesis: the difference O4 - O3 is due exclusively to the influence of the experimental factor.

A sample of 115 people was formed.

Data analysis was achieved with the support of SPSS system, by applying the Wilcoxon test to compare the differences between the two measurements in this case from two dependent samples. The data was measured with a scale interval that directly gave the scores obtained by each person before and after the experiment.

In a first phase, subjects were asked to express their views on how they liked the two chocolate brands, Africana and Luado, by completing a questionnaire containing 2 questions, on numerical scale up to 10: 1 meant "I don't like it, at all"- and 10 meant "I like it very much".

Next, subjects were submitted to a "blind" test using the following this scheme: they were asked to taste samples of chocolate and make their assessment using a numerical scale up to 10. After each tasting, subjects were instructed to take a break,

drink water and eat a salty biscuit. Although the subjects thought they were tasting two different types of chocolate, the samples actually contained the same type of chocolate. The actual difference was that in the first test (Observations O1 and O2) the chocolate is not in the packaging, and in the second test (Observations O3 and O4) the same chocolate is in different packaging. The averages obtained for the four measurements are presented in Table 1.

Table 1

The averages obtained for the four measurements

| Test 1 - Blind test - tasted samples without packaging | | | Test 2 - tasted samples in packaging | | |
|-----------------------------------------------------------|----------------------------------|----------------|-----------------------------------------|--------------------------------------------------------|----------------|
| | | <i>average</i> | | | <i>average</i> |
| O1 | Sample 1 (Africana chocolate) | 6.72 | O3 | Sample 1 (Africana chocolate in Africana packaging) | 6.53 |
| O2 | Sample 2 (Africana chocolate) | 6.59 | O4 | Sample 2 (African chocolate in Luado packaging) | 7.34 |

Beforehand, the subjects had been asked to make an appraisal of the two brands of chocolate (without tasting) on a numerical scale up to 10, where 1 meant "I do not like it at all" and 10 meant "I like it very much." The averages obtained for the two brands are presented in table 2.

Table 2

The averages obtained for the two brands

| Reviews made on brands without tasting | | | |
|----------------------------------------|------|--------------------|------|
| Africana chocolate | 5.54 | Africana chocolate | 7.26 |

To see if there were statistically significant differences between the subjects' assessments a test was used.

The results are presented below.

Stage 1. Control group: O1-O2. Determine the difference between O1 - test 1 - sample1 (Africana chocolate) and O2 - test 1 - sample 2 (Africana chocolate). At this stage the subjects believed they tasted two different types of chocolate which in reality was the same chocolate placed in two different containers.

Descriptive Statistics

Table 3

| | N | Mean | Std. Deviation | Minimum | Maximum |
|-------------------------------------------|-----|---------|----------------|---------|---------|
| O1: Test 1- Sample 1- Africana chocolate | 115 | 6.72174 | 2.352855 | 1.000 | .10 |
| O2: Test 1 - Sample 2- Africana chocolate | 115 | 6.5913 | 2.33920 | 1.00 | .10 |

Ranks

Table 4

| | | N | Mean Rank | Sum of Ranks |
|---------------------------------------------|----------------|-----------------|-----------|--------------|
| O2: Test 1 - Sample 2- Africana chocolate – | Negative Ranks | 55 ^a | 45.87 | 2523.00 |
| | Positive Ranks | 41 ^b | 52.02 | 2133.00 |
| O1: Test 1- Sample 1- Africana chocolate | Ties | 19 ^c | | |
| | Total | 115 | | |

a. O2: Test 1 - Sample 2- Africana chocolate < O1: Test 1- Sample 1- Africana chocolate

b. O2: Test 1 - Sample 2- Africana chocolate > O1: Test 1- Sample 1- Africana chocolate

c. O2: Test 1 - Sample 2- Africana chocolate = O1: Test 1- Sample 1- Africana chocolate

Test Statistics^a

Table 5

| | O2: Test 1 - Sample 2- Africana chocolate – O1: Test 1- Sample 1- Africana chocolate |
|------------------------|-----------------------------------------------------------------------------------------|
| Z | -.717 ^b |
| Asymp. Sig. (2-tailed) | .473 |

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

The results of the test indicate that there are no significant differences between the two observations, so the two chocolate samples were considered similar in taste.

Stage 2: Experimental group: O3-O4. Determine the difference between O3 - test 2 - sample1 (African chocolate in African pack) and O4 - test 2 -sample 2 (African chocolate in Luado pack).

Descriptive Statistics

Table 6

| | N | Mean | Std. Deviation | Minimum | Maximum |
|-----------------------------------------------------------|-----|--------|----------------|---------|---------|
| O3: Test 2- Sample 1- Africana's pack- Africana chocolate | 115 | 6.5304 | 2.17369 | 1.00 | .10 |
| O4: Test 2- Sample 2- Luado's pack- Africana chocolate | 115 | 7.3391 | 1.99950 | 3.00 | .10 |

Ranks

Table 7

| | N | Mean Rank | Sum of Ranks |
|--------------------------------------------------------------------------------------------------------------------|----------------|-----------------|--------------|
| O4: Test 2- Sample 2- Luado's pack- Africana chocolate - O3: Test 2- Sample 1- Africana's pack- Africana chocolate | Negative Ranks | 37 ^a | 48.22 |
| | Positive Ranks | 64 ^b | 52.61 |
| | Ties | 14 ^c | |
| | Total | 115 | |

a. O4: Test 2- Sample 2- Luado's pack- Africana chocolate < O3: Test 2- Sample 1- Africana's pack- Africana chocolate

b. O4: Test 2- Sample 2- Luado's pack- Africana chocolate > O3: Test 2- Sample 1- Africana's pack- Africana chocolate

c. O4: Test 2- Sample 2- Luado's pack- Africana chocolate = O3: Test 2- Sample 1- Africana's pack- Africana chocolate

Table 8

Test Statistics^a

O4: Test 2- Sample 2- Luado's pack- Africana chocolate -
O3: Test 2- Sample 1- Africana's pack- Africana chocolate

| | |
|------------------------|---------------------|
| Z | -2.700 ^b |
| Asymp. Sig. (2-tailed) | .007 |

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The results of the test indicate that there were significant differences between the two observations, so the subjects considered that one of the two samples (the one in the Luado package) tasted better than the other. It can be concluded that the taste is perceived differently depending on the package chocolate has.

4. Conclusions

After applying the Wilcoxon test, which was designed to determine whether or not the packaging had an impact on the subjects' perception of taste, it is clear that subjected to this stimulus (packaging) taste perception can be significantly influenced. A significantly

higher mark was received when subjects thought they tasted a chocolate with more attractive packaging. These results show the influence of packaging on consumer perception and importance to be given to packaging in marketing strategies.

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