EVALUATION OF THE PERCEPTION OF SENSORY AND EXPERIENCE LEVELS FOR CHEWING GUM PACKS

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Abstract

The design of packaging is a determining factor when choosing consumer packaged goods, particularly those considered to be impulse purchase products. In these cases it is useful to have a precise idea of which is the most suitable design for the image and values that the brands aim to convey.

Most of the research conducted in this field focuses on the sensory aspects transmitted by packaging without delving into the experiences associated with the perception or consumption of the product.

The investigation presented in this article aims to analyse the influence of the shape and colour of the packaging on the perception of potential consumers. For this purpose a questionnaire was designed that analyse both sensory and experience levels, relating them to the willingness to buy a product.

Some 390 people were interviewed and presented with nine different proposals for chewing gum packaging. The designs were devised through combining three different forms and colours that were rendered through 3D modelling.

Keywords: Perception; Packaging design; Willingness to buy.

1. Introduction

A product's packaging, besides protecting the contents and expediting transport, handling and storage, serves to grab the attention of potential buyers, to influence their willingness to buy and to even increase the acceptance of the product, once purchased (Cervera, 2003).

This marketing function of packaging is particularly important for consumer packaged goods, which in many cases are impulse buys. Unplanned purchases of confectionery products (sweets, chewing gum, etc.) can account for up to 85% of total sales (Meyer 1988). In Spain, in 2009, 39% of the sales of these products were made through outlets in the so-called impulse channel (newsagents, tobacconists, petrol station shops, etc.) (Cadbury, 2010).

In this situation, a product's advantage over its competition is its ability to capture the consumer's attention during the purchase decision moment. Given that the predominant sense used in this process is sight (Fenko, Schifferstein and Hekkert 2010), packaging is a key element in the decision to purchase a product. In a short space of time, a product's packaging must generate in the buyer expectations about its characteristics, its usage and the sensations and experiences it will produce during its subsequent consumption.

Through packaging design, companies therefore seek to devise communication strategies that are increasingly innovative, surprising and effective. In fact, some companies now spend more on packaging than on advertising. This makes packaging design the most distinguished marketing effort (Dickson, 1994).

Companies' growing interest in packaging and packing has prompted numerous studies into how these affect buyers’ and consumers' perceptions of the product.
Thus, studies have been carried out into the influence exerted by packaging on capturing the attention of potential buyers, either by incorporating images (Underwood, Klein, Burke, 2001) or by implementing redesigns that differ greatly from the original packaging (Schoomans & Robben, 1997).

Investigations have also been conducted into how packaging affects willingness to buy, both in relation to the material (Banks, 1950), the shape (Raghubir, Greenleaf, 2006), the colour (Plasschaert, 1995) or a combination of the shape and colour (Puyares, Ares, Carrau, 2010; Ares and Deliza, 2010).

Similarly, some researchers assert that packaging not only engages the buyer and influences the purchase of the product, but that it also affects product acceptance after the sale. In this vein, Cardello (1994) and Tuorila and Pangborn (1988) state that product acceptance is determined by the visual appearance of the packaging, and Ribeiro et al. (2008) assert that label design may change the acceptance of certain products. Other authors (Wansink, 1996; Raghubir, Greenleaf, 2006) affirm that the size and shape of packaging affect the buyer's behaviour in the use of the product.

There are even studies (Puyares, Ares, Carrau, 2010; Ares, Deliz, 2010) stating that packaging shape and colour influence the consumer's sensory expectations.

The authors of this paper found no bibliographical references to studies or investigations into the influence of packaging on the consumer's experience expectations.

Nevertheless, reviewing advertising for consumer packaged goods, companies now appeal more to the experience expectations that the user will have upon using the product than to sensory expectations. This strategic positioning stems from experiential marketing (Lenderman, 2008), focusing on a type of message that appeals to the emotional side of consumers, users or customers through offering the creation of new experiences. A product's added value is the experience it is capable of transmitting. The product becomes what it is capable of making you feel and experience (Serrano, Fernández and García, 2009).

This paper presents an investigation into chewing gum packaging, studying the influence of certain design variables on the consumer's perception of specific product attributes - sensory and experience attributes - as well as on willingness to buy. Chewing gum was chosen because it is one of the consumer packaged goods with the highest levels of unplanned purchases (Meyer 1988).

Against this background, the aims of the study were:

- To study the effect of packaging format on willingness to buy and on the consumer's perception of the sensory and experience attributes of chewing gum.
- To study the effect of packaging colour on willingness to buy and on the consumer's perception of the sensory and experience attributes of chewing gum.
- To analyse how the consumer's perceptions of the sensory and experience attributes of chewing gum packaging are related to their willingness to buy.

2. Materials and methods

2.1. Participants

The participants in this investigation comprised 390 people from the city of Zaragoza (Spain), of which 37.2% were male and 62.8% were female. The average age of the group was 17.2 years, with a standard deviation of 2.1 years. When asked about their chewing gum consumption habits, 46.2% responded that this was almost daily, another 46.2% said they were occasional consumers and 7.7% replied that they hardly ever consumed gum.

This segment was chosen because adolescents and young adults are the most frequent consumers of chewing gum. According to Ramos (2007), 78.3% of Spaniards between the ages of 16 and 25 consume chewing gum.
2.2. Procedure

A two-stage sampling process was carried out. Firstly, two secondary schools and a university faculty were chosen at random. Secondly, the classes to be given the questionnaire were selected, also randomly (12 in the secondary schools and 2 in the university). In these classes, all students who were present at that time were surveyed.

Participants were given an A3-size sheet with nine images of chewing gum packets (see Figure 1) and a questionnaire to evaluate them. These visual stimuli were created using Autodesk 3ds Max Design 2011, and they presented two variables in packaging design: colour and format. The colours chosen were a scale of greys (1, 2 and 3), cool colours (4, 5 and 6) and warm colours (7, 8 and 9). The formats used were the pill pack (1, 4 and 7), the slim pack (2, 5 and 8) and the blister pack (3, 6 and 9). The images contained no references to trademarks or brand names.

![Figure 1. Images used in the investigation](image)

Participants spent an average time of about 30 minutes completing the survey, during which the researchers were present to answer any questions or queries. Once the questionnaires were completed, participants were given a pack of chewing gum to thank them for assisting in the study.

2.3. Measurements

The survey evaluated a total of 21 product attributes, identified and chosen by a panel of experts. These attributes were divided into two different categories: Sensory and experience, as well as willingness to buy. The list of attributes is shown in Table 1.

![Table 1. List of the product attributes used in the investigation](table)
2.4. Data analysis

The Individual differences model (Horan, 1969; Carrol & Chang, 1970) was used to analyse the data obtained. This model is used to find out the similarities or dissimilarities between a set of stimuli (nine chewing gum packet designs, in this case) and a set of attributes, and to analyse the preferences of the subjects surveyed. This method, also called INDSCAL, is based on multidimensional scaling (Schiffman et al., 1981). It allows the creation of a consensus space showing the similarities among the packs of chewing gum when chosen by individuals, and it shows the weighting that each individual gave to the dimensions obtained in the consensus space. The weightings reflect the importance that respondents gave to the dimensions of the consensus space.

This technique was used in each of the categories. Euclidean distance was chosen as the measure of similarity, and S-Stress as the adjustment and dimensioning measurement (Schiffman et al., 1981).

The vector model (Davison, 1984) was used to interpret the dimensions of preference in each attribute category evaluated. This method transforms a multidimensional space (with the same number of dimensions as attributes studied) to a bidimensional space. The interpretation of the meaning of each dimension is related to the proximity of the vectors that represent the attributes. The attribute-vector is displayed as a line in the space representing the chewing gum packs on which the projection of each stimulus corresponds with the degree of attributes possessed by the stimulus. If a particular attribute is closely related to the stimulus space, the stimulus projects coincide closely with the value of the attribute. When two attributes lie in the same direction, this also indicates a high correlation between the two. This model allowed the chewing gum packs to be ordered in each of the attributes evaluated by the subjects. It also made it possible to determine which attributes present a high correlation in the evaluation of the stimuli. Information was also included on individuals' willingness to buy.

The data was processed using SPSS package (version 18).

3. Materials and methods

This section presents the results of this investigation in relation to the different product attributes analysed.

3.1. Sensory attributes

The analysis of the similarities of the different designs in relation to attributes in the taste category shows a difference in terms of the chewing gum packaging colours (Figure 2). The measure of fit is also good with an S-Stress value of 0.031. The designs in warm colours 7, 8 and 9 are differentiated from other designs in dimension I. This dimension is defined by attributes related to the type of taste. Sweet, fruity and acidic appear to the right and spicy to the left. The subjects gave higher scores to designs 7, 8 and 9 for the attributes sweet, fruity and acidic. Dimension II is defined primarily by attributes related to the strength of taste such as intense and long-lasting and, to a lesser extent, fresh. This dimension shows a scale of order in which the designs in cool colours 5, 4 and 6 received higher scores in the attributes defining this axis, the designs 7, 8 and 9 have intermediate positions and the scale of grey designs 1, 2 and 3 received low scores. Some 64% of individuals surveyed gave equal importance to both dimensions, while 28% gave more importance to dimension I and only 8% rated dimension II more highly. The average score for willingness to buy was significant in the subspace created by the attributes of the sensory category, this being more closely related to dimension I and, to a lesser extent, to dimension II. This external variable runs in the same direction as the attributes sweet, fruity and acidic and also intense. If the stimuli are projected on the direction defined by willingness to buy, the order of preference in this subspace can be observed. The warm colours were most highly valued, followed by the cool
colours and finally the grey colours. Compared to the real average value (Figure 3) the general order is similar, but not identical. This could indicate that attributes other than those in the taste category are involved in willingness to buy.

**Figure 2. Consensus space of the taste attributes**

3.2. Experience attributes

The analysis of the attributes transmitted by the chewing gum packaging designs in this category reveals a difference in the two dimensions (Figure 4). The adjustment measurement is 0.08. Dimension I is defined by attributes referring experiences very often related to young people (fun, dynamic, attractive, rebellious and mysterious), whereas dimension II is defined by attributes relating to novelty (innovative and sophisticated). The attribute elegant relates to both dimensions equally. Dimension I differentiates designs by colour, and dimension II by shape. Design 8 was seen as daring and innovative, whereas design 1 received the lowest scores for these attributes. An analysis of the individuals' weightings shows that most valued dimension I more highly (51.9%), with only 8.1% giving higher scores to dimension II. Some 40% gave similar values to both dimensions.

**Figure 3. Average values of willingness to buy**

Willingness to buy was significant in the subspace generated by the experience attributes. As can be seen in Figure 4, the representation of this attribute through the vector has the same direction as the attributes fun, dynamic, attractive, rebellious, mysterious, innovative and sophisticated, which indicates that willingness to buy is closely related to these attributes. It can also be seen that willingness to buy shares characteristics with both dimensions, although it is more closely related to dimension I. If the projections of the designs are made on the direction indicated by willingness to buy (Figure 5), it can be
seen how the order of preference practically coincides with the average order obtained from the individuals’ scores (Figure 3). Only design 5 is placed below design 9, when in the average evaluation it is above. This could indicate that willingness to buy the designs is mainly influenced by the experience attributes.

**Figure 4. Consensus space of the experience attributes**

![Figure 4](image)

**Figure 5. Order of preference of the designs with respect to willingness to buy in the consensus space of the experience attributes**

![Figure 5](image)
4. Discussion

The following section discusses the results obtained compared with the research objectives of this project.

4.1. Influence of packaging format

The slim pack format was related to, and seen as best embodying, experience attributes conveying sophistication and innovation. This result is in step with the most recent chewing gum pack designs to come onto the market, making them the most modern. At the other end of the scale, the pill pack formats were perceived as the least sophisticated and innovative, probably because this format is the one used by more traditional chewing gums that have been on the market for a long time.

Finally, when asked about their willingness to buy, the respondents expressed a clear preference for slim pack formats over the others, as shown in Figure 3.

4.2. Influence of packaging colour

The packaging in warm colours (7, 8 and 9) was perceived as fruity, acidic and sweet, whereas packaging in cool and grey colours (1, 2, 3, 4, 5 and 6) was seen as more closely related to menthol and spicy tastes. Packaging in cool colours was perceived to have more intense and long-lasting tastes.

In the analysis of the results obtained of the experience levels of products, warm colours were related to attributes such as fun, dynamic, sensual and rebellious, all of which are closely related to the young public that was surveyed. On the other hand, the grey colours were related to the attributes elegant and mysterious, as other authors have noted (Ampuero & Vila, 2006). Cool colours sit mid-way between the warm and grey colours.

In the analysis of the influence of colour on willingness to buy, it can be seen that consumers prefer packaging in warm colours, followed by cool colours and then by grey colours.

4.3. Relationship between product attributes and willingness to buy

By studying consumers' willingness to buy, a relationship was only found with the sensory and experience attributes.

With regard to the taste attributes, the results show that willingness to buy is related to fruity, acidic and sweet tastes, and to more intense flavours. In relation to the experience attributes, the chewing gum packaging most liked by consumers were those suggesting daring and youthful experiences and, to a lesser extent, those related to innovation.

The results show that experience attributes are most influential on willingness to buy. Respondents favoured packaging in warm colours, preferably in the slim pack format.

5. Conclusions

The results of this investigation indicate that the design variable with most influence on willingness to buy is colour, with warm colours being preferred by younger consumers. There is also some relationship between packaging format and willingness to buy, although this is less significant than colour. The preferred format is the slim pack, which corresponds with the most innovative proposals that have come on the market recently. It can also be seen that the experience attributes of the product are those that best explain the variable willingness to buy, these being more important than sensory attributes.

6. References


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